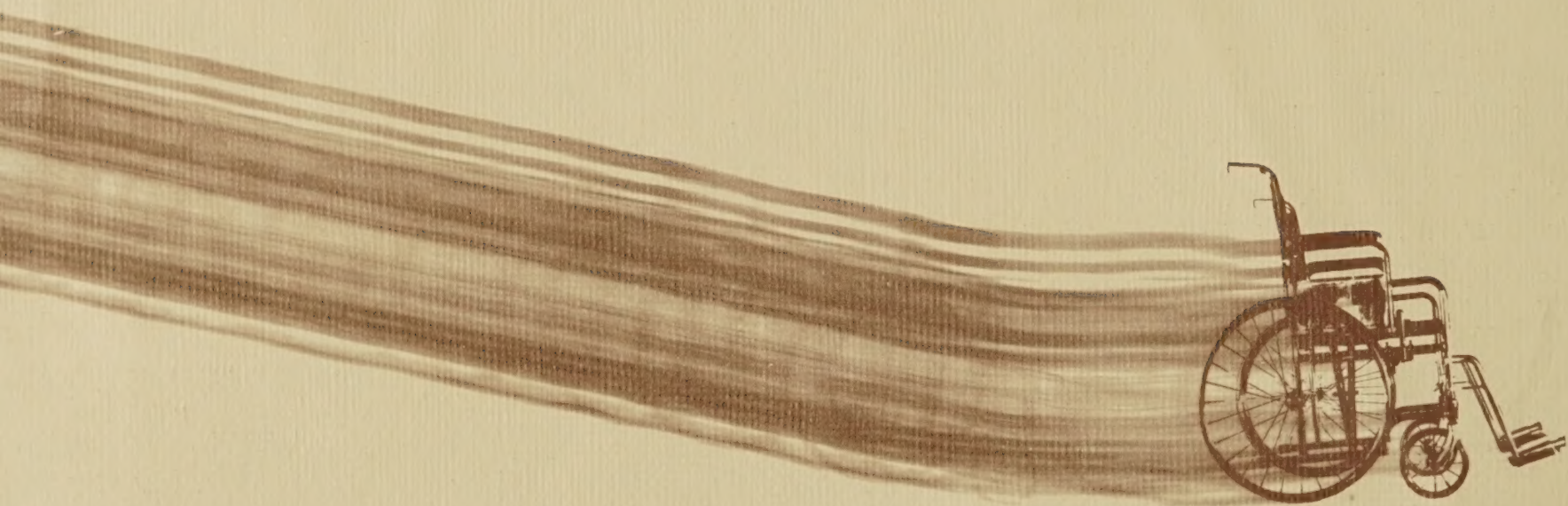


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**AN ILLUSTRATED HANDBOOK
OF THE HANDICAPPED SECTION
OF THE NORTH CAROLINA
STATE BUILDING CODE**





AN ILLUSTRATED HANDBOOK OF THE HANDICAPPED SECTION OF THE NORTH CAROLINA STATE BUILDING CODE

**ronald l. mace, a.i.a.
betsy laslett, editor**

**including a reprint of
general construction, volume 1
section 11x: making buildings &
facilities accessible to & usable
by the physically handicapped
and dec. 1973 amendments**

**for the governor's
study committee on
architectural barriers
chairman howard f. twiggs**

**and the north carolina
department of insurance
commissioner john r. ingram**

governor james e. holshouser

1974

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preface

Aware of the difficulties of the physically handicapped in coping with environmental barriers, former Governor Robert W. Scott established in 1971 the Governor's Study Committee on Architectural Barriers. Governor James E. Holshouser, supporting the work of the Committee, extended it into 1973. Chaired by the Honorable Howard F. Twiggs, the Committee examined the problems of the handicapped and made recommendations which were published in their Interim Report in 1971 and Final Report in 1972. These recommendations initiated a revision of the North Carolina Building Code's handicapped section. After a year of negotiation and compromise with all building interests, a new, stronger, and more comprehensive section was written and approved by the Building Code Council in March, 1973, and became effective September 1, 1973. It was amended in December, 1973, and has been completely reprinted here for the Department of Insurance. **This handbook supercedes all previous publications of the handicapped section of the code.**

The new handicapped section provides the guidelines for making most new and remodeled buildings accessible to and usable by handicapped people—those in wheelchairs, on crutches, with leg braces, or with sight, hearing, or coordination defects, or those who through aging, accident, or disease move with difficulty. It is the spirit and intent of the code requirements to provide these people full and free use of all buildings and facilities in the State so that they may have the education, employment, living, and recreation opportunities necessary to be as self-sufficient as possible.

To assist the architects, engineers, builders, and building inspectors who will implement the code, it was suggested to the Governor's Study Committee that the new handicapped section be fully illustrated so that all those involved in designing and constructing buildings will be able to see quickly and clearly

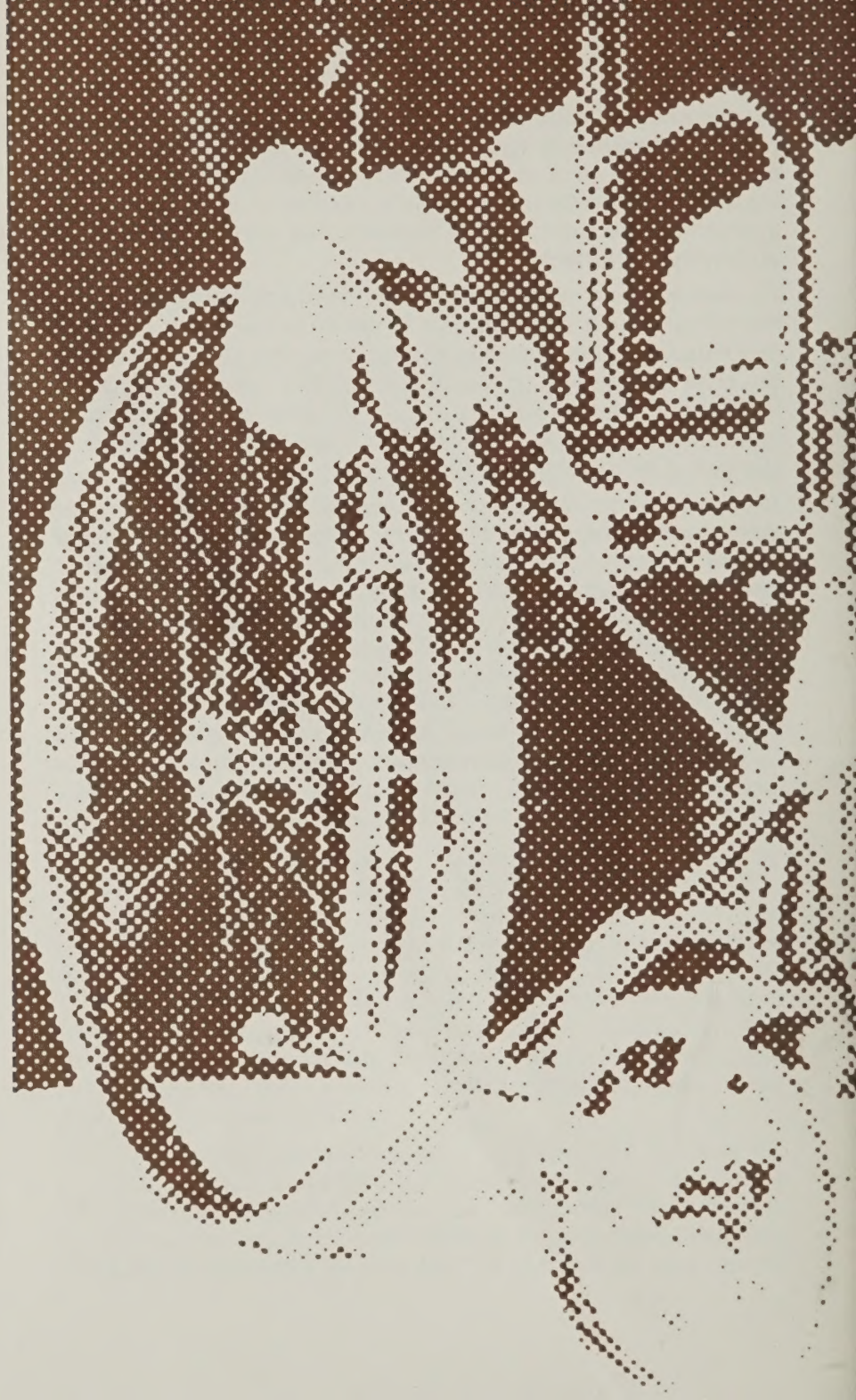
exactly what the code requirements mean. Governor Holshouser generously agreed to fund the preparation of this handbook. In addition to the code material and the illustrations, we have included for reference in Appendix D reprints of four recent laws concerning the rights of the handicapped and the removal of architectural barriers.

To communicate graphically the critical and subtle needs of the handicapped, each section of the code has been reviewed and illustrated; the drawings are accompanied by a reference to the code section and an explanation of the code wording which is itself printed on the facing pages. Wherever the code wording is obscure or complicated, we have made a particular effort to clarify and interpret the meaning.

The illustrations are not only examples of minimal design requirements, but are also intended to show the reasons for them so that designers and builders can find new and better ways of meeting the needs of the handicapped. Since building code provisions are of necessity minimal, and are therefore often not the best possible solution, we have identified several which we find inadequate and have given alternative solutions which are identified by the symbol

PREFERRED	*
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 We hope these notes will be helpful to those conscientious designers who will want to go beyond the minimal requirements in providing for the handicapped.



acknowledgments

This book would not have been possible without the original work of the Governor's Study Committee on Architectural Barriers established by former Governor Robert W. Scott, chaired by the Honorable Howard F. Twiggs. Production was made possible by a grant from the Council of State with the generous support of Governor James E. Holshouser who also continued the Governor's Study Committee into 1973 in order to assist with this work. I would also like to extend my thanks to the Honorable John R. Ingram, Commissioner of Insurance, for his time and interest; and to Kern E. Church, Deputy Commissioner and Secretary to the Building Code Council, for his support and patience in waiting for the completion of this book. To John Dalrymple, Vice-Chairman of the Governor's Study Committee, I would like to give special thanks for his unfailing enthusiasm and work on our behalf. Bill Laslett kindly made his office available to us and gave us endless encouragement. Those who have contributed more intimately to this project are Betsy Laslett, editing, proofing; Michael Quarterman, graphics; and Lane Atkins, photography.

Ronald L. Mace

**NORTH CAROLINA
STATE BUILDING CODE**

**VOLUME I
GENERAL CONSTRUCTION**

SECTION (11X)

**MAKING BUILDINGS AND FACILITIES
ACCESSIBLE TO AND USABLE BY THE
PHYSICALLY HANDICAPPED**

Adopted by the North Carolina Building Code
Council in accordance with Act
of the General Assembly of
1957, Chapter 1138
March 13, 1973
Effective Date September 1, 1973

**PUBLISHED BY
THE NORTH CAROLINA BUILDING
CODE COUNCIL**

and the

**NORTH CAROLINA DEPARTMENT
OF INSURANCE
P. O. Box 26387—Raleigh, North Carolina
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By Statute the Commissioners of Insurance has general supervision of the administration and enforcement of the North Carolina Building Code and the Engineering Division serves as the staff for the Building Code Council. Officials of the Insurance Department are:

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Commissioner

KERN E. CHURCH, P.E.
Deputy Commissioner
Engineering and Building Codes and
Secretary to Council

FOREWORD TO THE CODE

These provisions making buildings and facilities accessible to and useable by the physically handicapped were adopted on March 13, 1973 by the North Carolina State Building Code Council and takes the place of Section (11X) incorporated in the 1967 edition of the State Building Code and all the amendments made subsequent thereto.

These provisions were developed through several meetings with representatives of the Governor's Study Committee on Architectural Barriers, N. C. Chapter of American Institute of Architects, Professional Engineers of North Carolina, Council of Code Officials, N. C. Home Builders Association, N. C. General Contractors of America, N. C. Association of Plumbing, Heating and Cooling Contractors, N. C. Electrical Contractors Association, Property Control Division, Department of Administration, Medical Care Commission, Department of Human Resources, Division of School Planning, Department of Public Instruction and a special Committee of the Building Code Council consisting of Mr. Ray Moore, Chairman and Mr. Julian Altobellis and Mr. John Fox members. The Committee's goal was to recommend changes to Section (11X) which would not cause a real hardship on the owners, designers and constructors of buildings within the State and which would also provide for accessibility for the physically handicapped.

NOTE TO DESIGNERS AND OWNERS OF BUILDINGS

The goals of the physically handicapped person are to have access to and throughout all buildings so they can live a more normal life and assume full responsibilities as citizens. This goal is shared by everyone.

The application of building regulations by designers and owners should take into account the safety of all occupants including the physically handicapped. Elevators are usually incapacitated early in a fire, and they are not counted as means of egress. Since the physically handicapped need assistance to negotiate stairs in exiting a building, designers and owners of buildings should consider specially designed spaces for the physically handicapped on a level where an approved ramp to grade is provided so the handicapped may exit the building without assistance. If this is not possible, designers and owners should consider the normal use of the building while the physically handicapped occupy it to assure provisions for a sufficient number of able-bodied persons readily available to assist the physically handicapped in the evacuation from such spaces down the stairs and other means of egress provided as exits in case of a fire or other emergency.

(11x)1 scope

- a) This standard applies to all buildings and facilities regulated by the North Carolina State Building Code, with the exception of single-and two-family detached dwellings in accordance with the following:

Residential—A (Sleeping Occupancy)

Apartments, hotels, motels, dormitories—This Standard applies to all these buildings where specifically provided for in Section (11X)5.

Business—B

B-1—(Office Occupancy)—This Standard applies to all these buildings except that the requirements of this Standard may be waived by the enforcing authority where the code makes these requirements applicable for small buildings which are already built.

B-2 (Shopping)

Mercantile Stores and Shopping Centers—This Standard applies to all these buildings.

Schools—C (Educational Facilities)—This Standard applies to all these buildings and as specifically provided for in Section (11X)5.2.

Jails, Prisons, Mental Hospitals, Orphanages and Nursing Homes and Hospitals—This Standard applies to all public areas of these buildings and as specifically provided for in Section (11X)5.2.

Assembly—E

Stadiums, Grandstands, Theaters, Dance Halls, Skating Rinks, etc.—This Standard applies to all public areas of these buildings and as specifically provided for in Section (11X)6 and (11X)7. Assembly areas which are raised above the floor or on an incline need not meet these requirements provided spectator areas which are accessible for the handicapped are designed as a part of such an assembly.

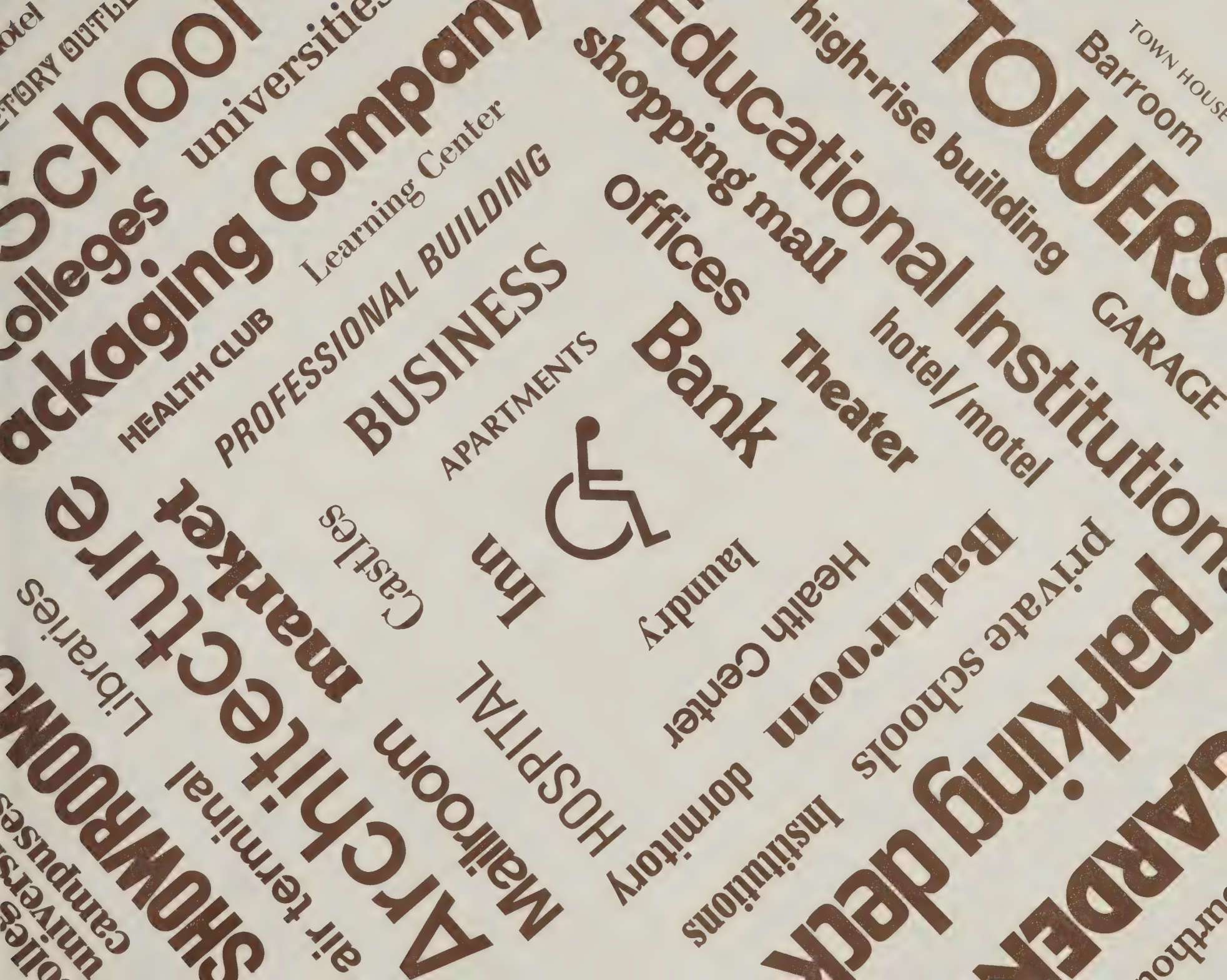
Storage—F

Airplane Hangers, Garages and Warehouses

Industrial—G

Industrial Plants—This Standard applies to all these buildings except that the requirements of this standard may be waived by the enforcing authority for garages with attendants, heavy storage or industrial areas and other similar type occupancies.

- b) This Standard is mandatory on all new construction of buildings and facilities as herein defined and identified. The addition of a wing unit to an existing facility shall be considered new construction, of and by itself, and would therefore be mandated under this standard.
- c) This Standard does not apply to the restoration or authentic reconstruction of a historic structure approved (after consultation with the Governor's Study Committee on Employment of the Handicapped) by the Office (formerly Department) of Archives and History pursuant to the provisions of G. S. 121-7.5.



international symbol of accessibility for the handicapped



The International Symbol of Accessibility for the Handicapped should be used and prominently displayed to identify accessible facilities, including, but not limited to, entrances to buildings, elevators, accessible restrooms, water fountains, public telephones, recreation and rest areas, etc.

Any advertising of such facilities, including trademark signs erected to identify facilities, should display the International Symbol of Accessibility.

[11x]2 definitions

(11x)2.1—non-ambulatory disabilities

Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs.

(11x)2.2—semi-ambulatory disabilities

Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastic and those with pulmonary and cardiac ills may be semi-ambulatory.

(11x)2.3—sight disabilities

Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

(11x)2.4—hearing disabilities

Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

(11x)2.5—disabilities of incoordination

Faulty coordination of palsy from brain, spinal, or peripheral nerve injury.

(11x)2.6—aging

Those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination, and perceptiveness but are not accounted for in the aforementioned categories.

(11x)2.7—ramps, ramps with gradients

The term "ramp" is defined as a sloping walkway which is attached to a building as a means of moving from one floor elevation to another without encountering any obstructions. Ramps are above normal level.

(11x)2.8—walk, walks

The term "walk" is defined as a predetermined, prepared-surface, exterior pathway leading to or from a building which is placed on the same level as the ground level immediately adjacent thereto.

[11x]3 - site development required for ingress and egress

(11x)3.1—grading

Access to primary entrances usually considered as major points of pedestrian flow to all buildings which Section (11X)1.1 applies to shall be provided for the handicapped through the proper grading or use of approach ramps. An exception shall be those primary entrances to residential units in privately owned residential projects, which are not part of schools or institutions, which are not identified in (11X)5.

NOTE: Such accessible entrances shall include primary public entrances connecting public transportation stops; primary entrances connecting parking areas specially designated for the handicapped; primary entrances connecting walkways, between buildings in a given complex (e.g., school campus buildings, apartment buildings, shopping center buildings, etc.)

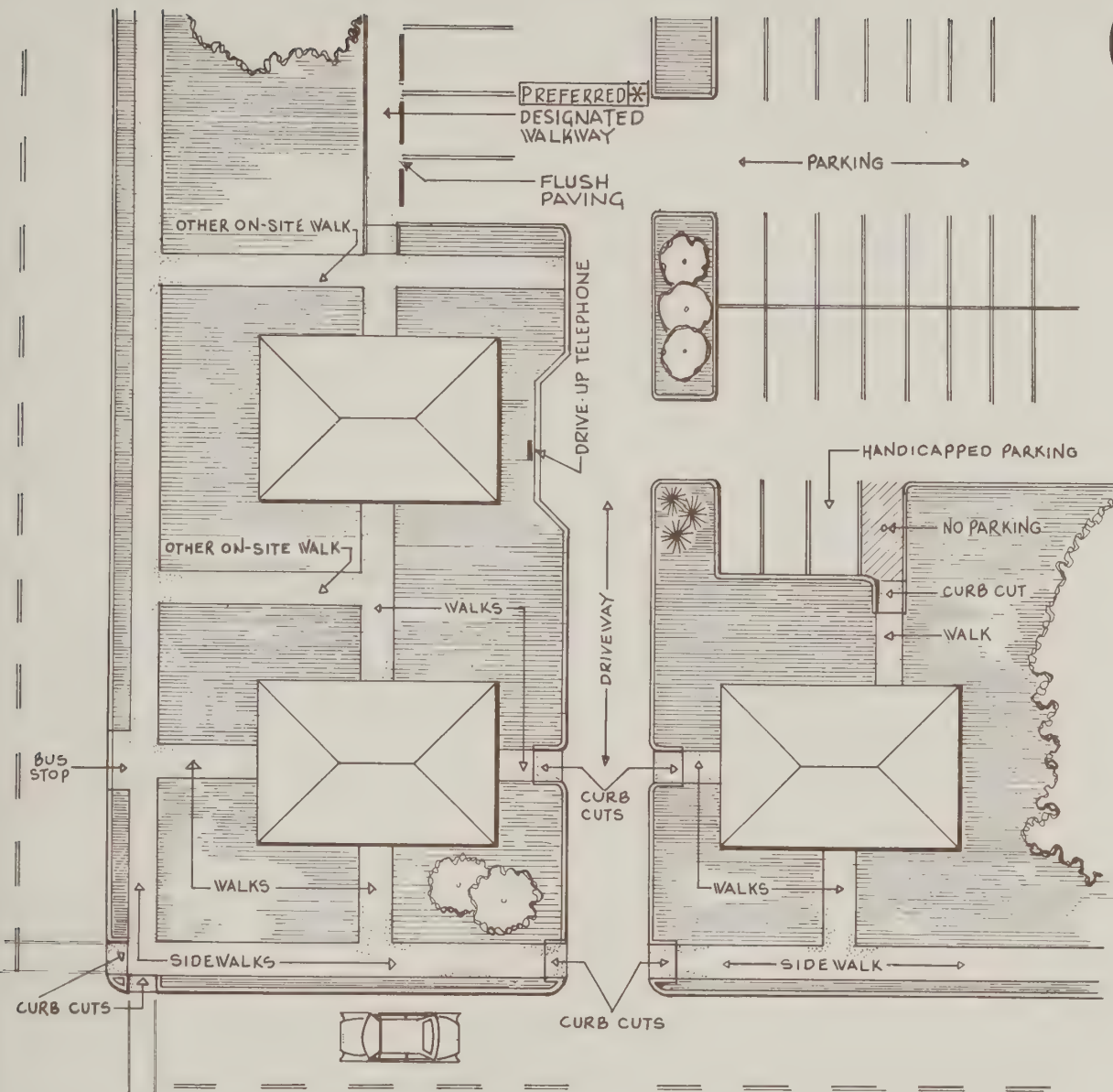
(11x) 3 site development

11x3.1 grading

ACCESS BY MEANS OF GRADING, APPROACH RAMP, OR WALKS SHALL BE PROVIDED FOR ALL BUILDINGS EXCEPT PRIVATELY OWNED RESIDENTIAL PROJECTS (HOUSES, CONDOMINIUMS, & APARTMENTS LESS THAN 10 UNITS).

IT IS **PREFERRED*** WHERE POSSIBLE, THAT DESIGNATED WALKWAYS BE PROVIDED TO ELIMINATE THE NEED OF THE HANDICAPPED TO WALK OR WHEEL BEHIND PARKED VEHICLES.

PUBLIC WALKS END AT BUILDINGS AND CONNECT THE BUILDINGS WITH PUBLIC TRANSPORTATION STOPS, HANDICAPPED PARKING AREAS, OTHER WALKWAYS, AND OTHER BUILDINGS IN THE SAME COMPLEX.

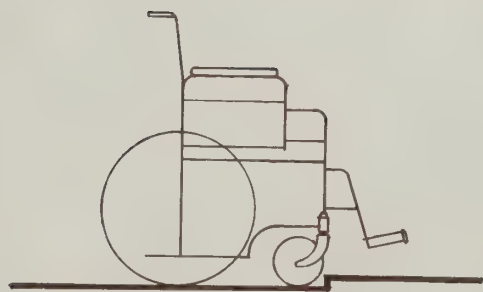
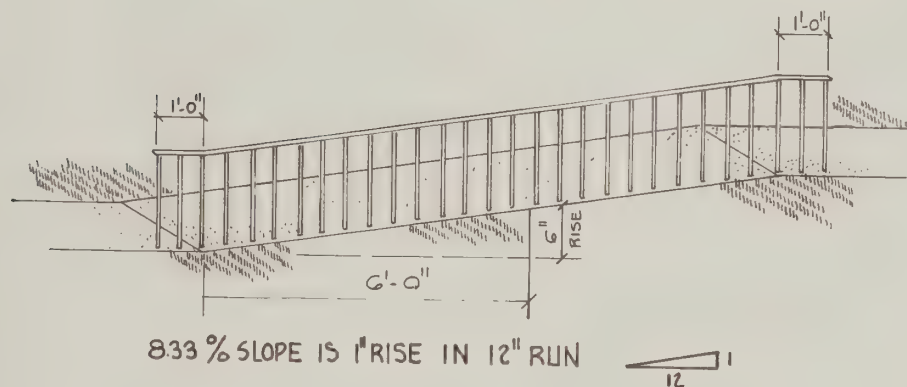
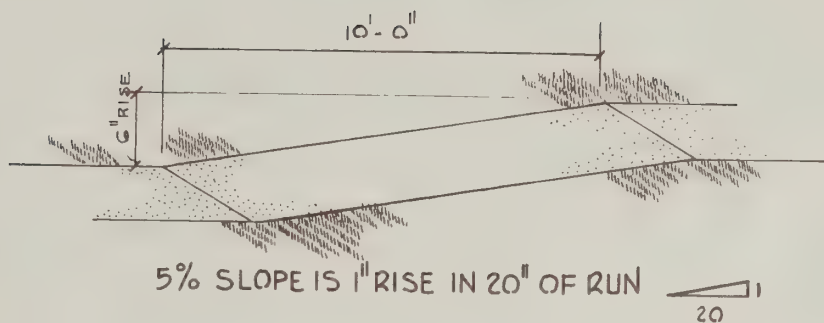


PUBLIC WALKS, AS DEFINED BY THE CODE, END AT BUILDINGS AND DO NOT INCLUDE SIDEWALKS. FOR OTHER ON-SITE WALKS NOT CONNECTED TO BUILDINGS IT IS **PREFERRED*** THAT STEPS, ABRUPT CHANGES IN LEVEL, AND STEEP SLOPES BE AVOIDED.

DRIVE-UP TELEPHONES ARE **PREFERRED*** AS A CONVENIENCE TO THE HANDICAPPED.

(11x)3.2—walks

- a) Public walks connecting primary entrances as defined in (11X)3.1 shall be at least 48 inches wide and shall have a gradient no more than 5%. Where handrails are provided, the gradient may be 8.33%.
- b) Such walks shall have a continuous common surface not interrupted by steps or abrupt changes in level greater than $\frac{1}{2}$ inch. Where walks cross driveways or parking lots they shall blend to a common level by means of curb cuts, and slopes not to exceed 5% gradient. Care should be taken that the curb cut is not in itself a hazard to the blind.



VERTICAL LEVEL CHANGES GREATER THAN $\frac{1}{2}$ "
OBSTRUCT SMALL WHEELS OF CHAIR AND MAY TRIP
THOSE WITH SEMI-AMBULATORY DISABILITIES (SEE 11x2.2)

11x3.2 walks

A WALK IS DEFINED AS A PREDETERMINED, PREPARED SURFACE, EXTERIOR PATHWAY LEADING TO OR FROM A BUILDING AND ON THE SAME LEVEL AS THE ADJACENT GROUND. (SEE 11x2.8 - WALKS)

11x3.2(a) IF THE SLOPE OF THE WALK IS 5% OR LESS, THEN NO HANDRAIL IS REQUIRED.

IF THE SLOPE OF THE WALK IS GREATER THAN 5%, A HANDRAIL IS REQUIRED ON ONE SIDE (SEE 11x4.1 (b) - HANDRAILS).

HANDRAILS ARE PREFERRED* ON BOTH SIDES.

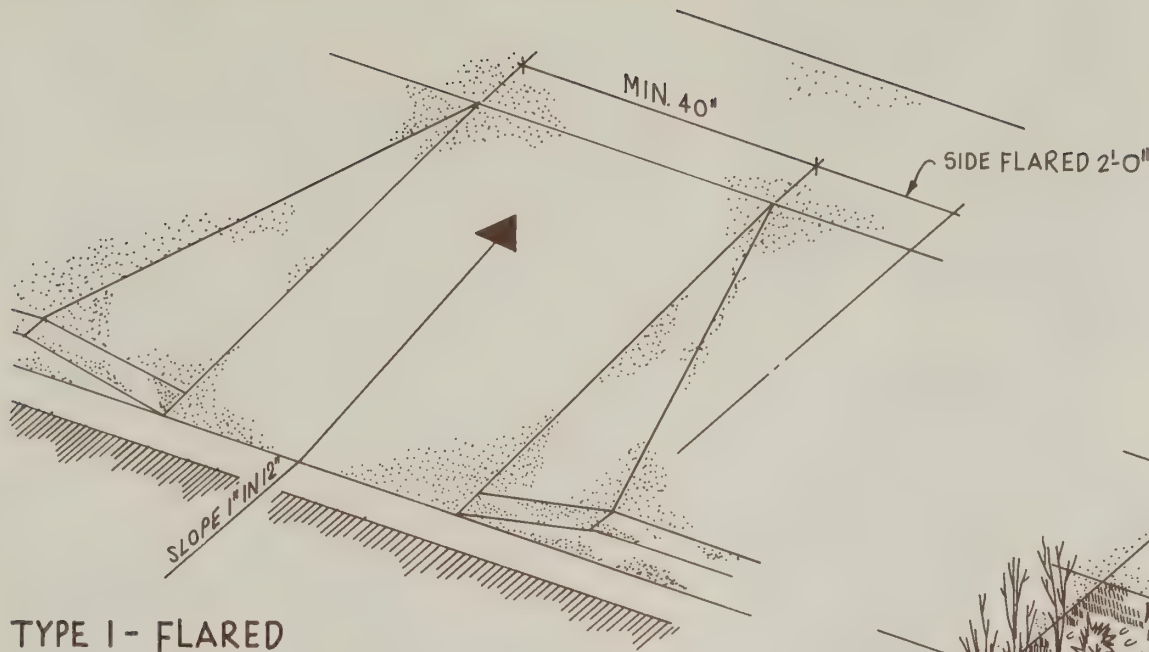
THE SLOPE OF A WALK MAY NOT EXCEED 8.33%.

11x3.2(b) WALKS SHALL HAVE A CONTINUOUS COMMON SURFACE NOT INTERRUPTED BY STEPS OR ABRUPT CHANGES IN LEVEL GREATER THAN $\frac{1}{2}$ ".

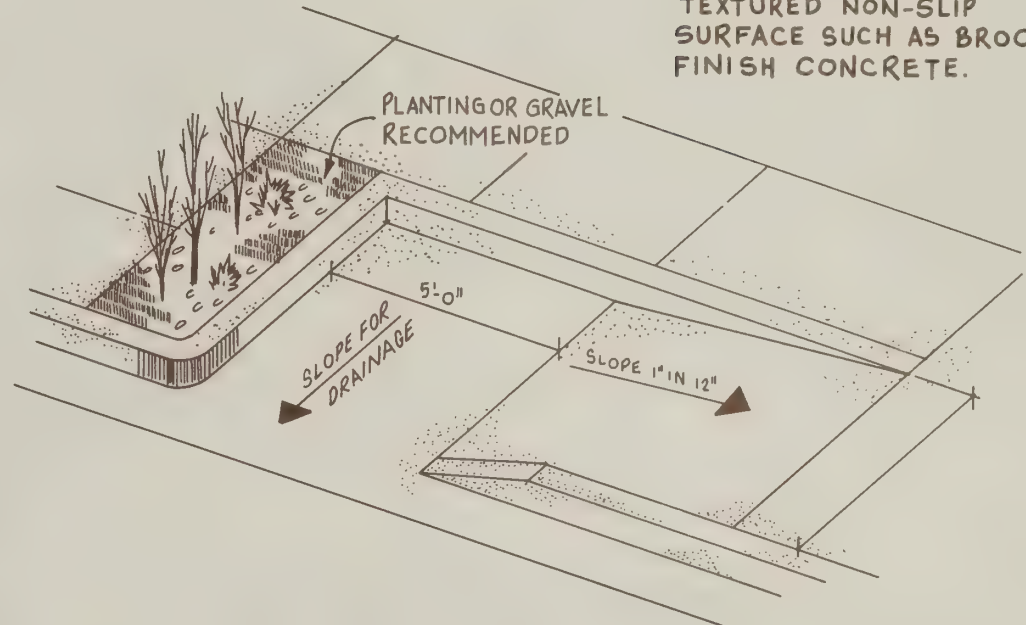


11x3.2(b) FOR CURB CUT DETAILS
(CONT'D) REFER TO NORTH CAROLINA
GENERAL STATUTE GS 136-44.14
AND THE N.C. DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PUBLICATION, "GUIDELINES
CURB CUTS AND RAMP
FOR HANDICAPPED PERSONS",
AND RECOMMENDATIONS
CONTAINED HERE.

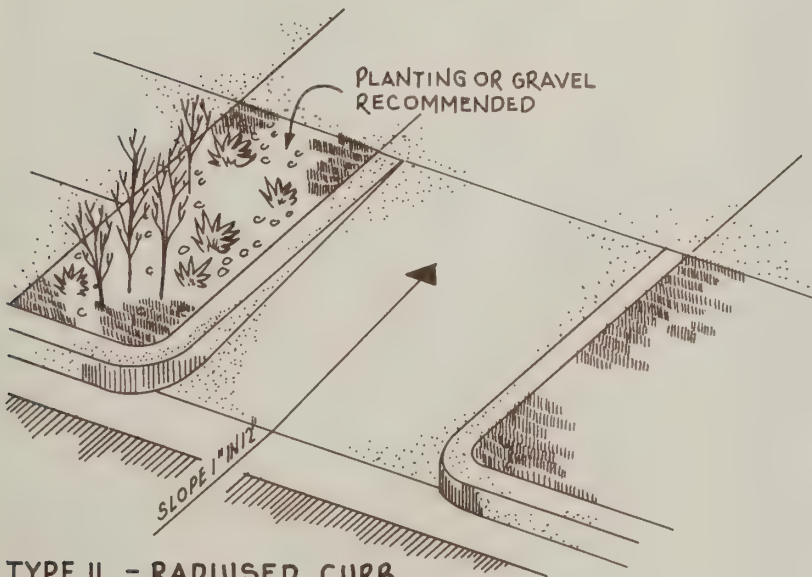
CURB CUT SHOULD HAVE A
TEXTURED NON-SLIP
SURFACE SUCH AS BROOM
FINISH CONCRETE.



TYPE I - FLARED



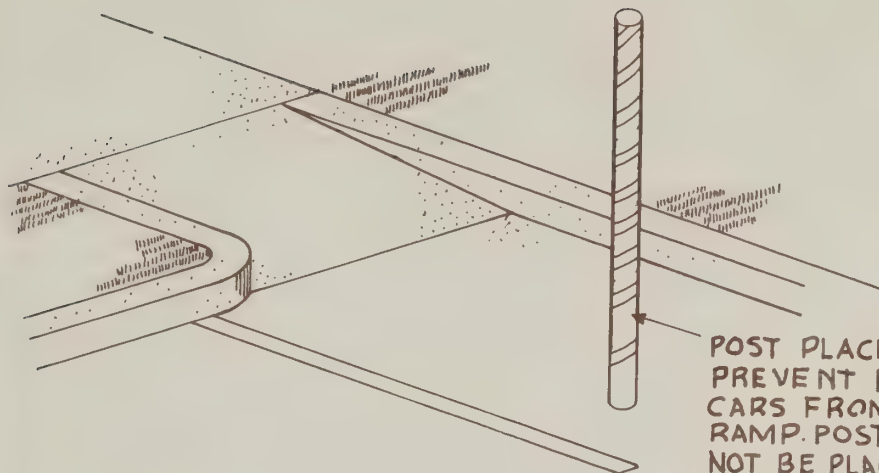
TYPE III - PARALLEL
WHEN INSUFFICIENT DEPTH
IS AVAILABLE FOR 8.33%
SLOPE, RAMP MAY RUN
PARALLEL TO STREET.



TYPE II - RADIUSED CURB
THIS TYPE PREFERRED * BECAUSE
CURB PROVIDES VISUAL DEMARCATION
& DIRECTIONAL ORIENTATION FOR
THE BLIND.

TYPE IV - WARPED
SEE N.C. DEPARTMENT OF
TRANSPORTATION DIVISION
OF HIGHWAY PUBLICATION.
THIS TYPE REQUIRED AT
ALL STREETS, HIGHWAYS,
ROADS, ETC. IN ACCORDANCE
WITH GS 136-44.14

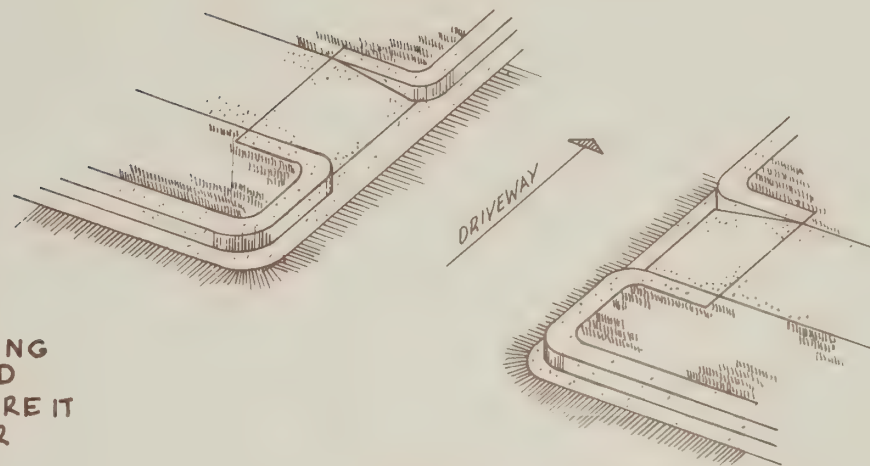




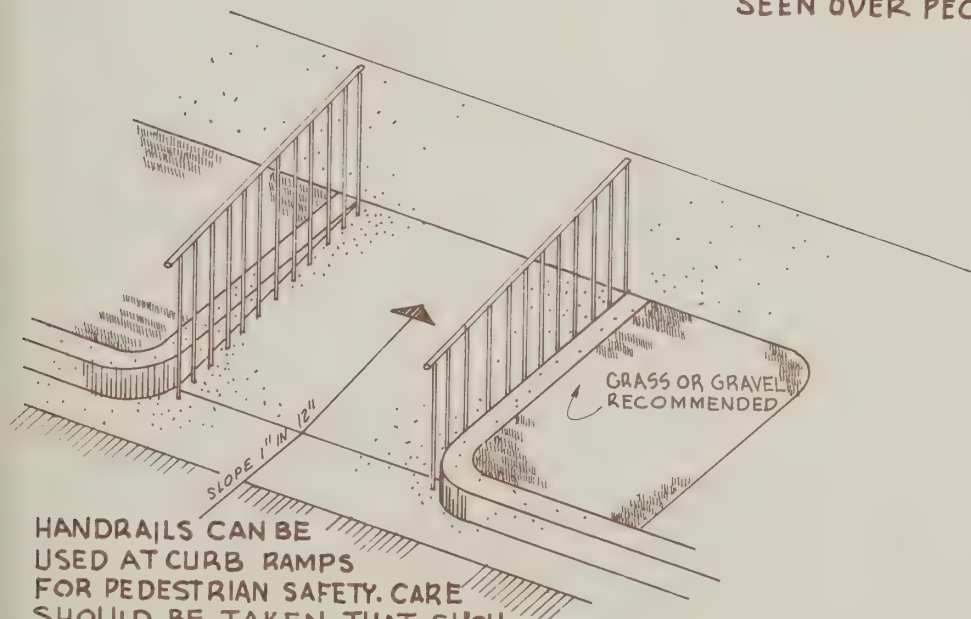
POST PLACED TO PREVENT PARKED CARS FROM BLOCKING RAMP. POST SHOULD NOT BE PLACED WHERE IT BLOCKS WHEELCHAIR ACCESS TO CARS. AT MAJOR POINTS OF PEDESTRIAN FLOW, POST SHOULD BE TALL ENOUGH & APPROPRIATELY PAINTED OR MARKED TO EASILY BE SEEN OVER PEOPLE'S HEADS.

CURB CUTS SHOULD BE LOCATED WHERE IT IS IMPOSSIBLE FOR THEM TO BE OBSTRUCTED BY CARS OR OTHER BARRIERS.

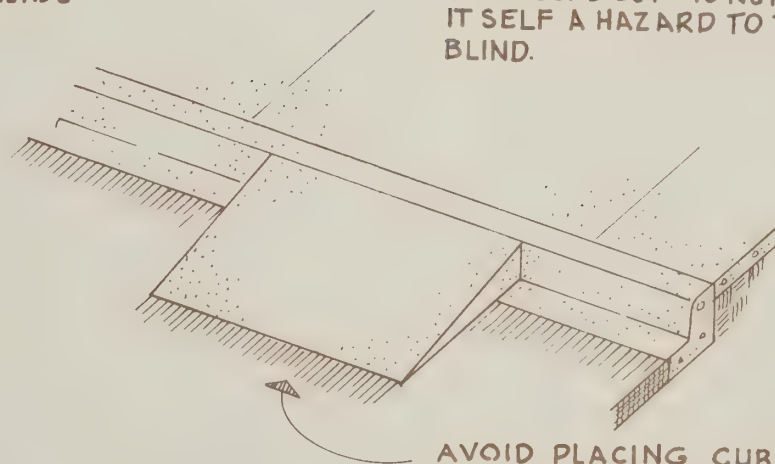
11X3.2(b) CURB CUTS (CONT'D)



11X3.2(b) ALL WALKS CROSSING DRIVEWAYS MUST WARP DOWN TO A COMMON LEVEL WITH THE STREET. CARE SHOULD BE TAKEN SO THAT CURB CUT IS NOT IN ITSELF A HAZARD TO THE BLIND.



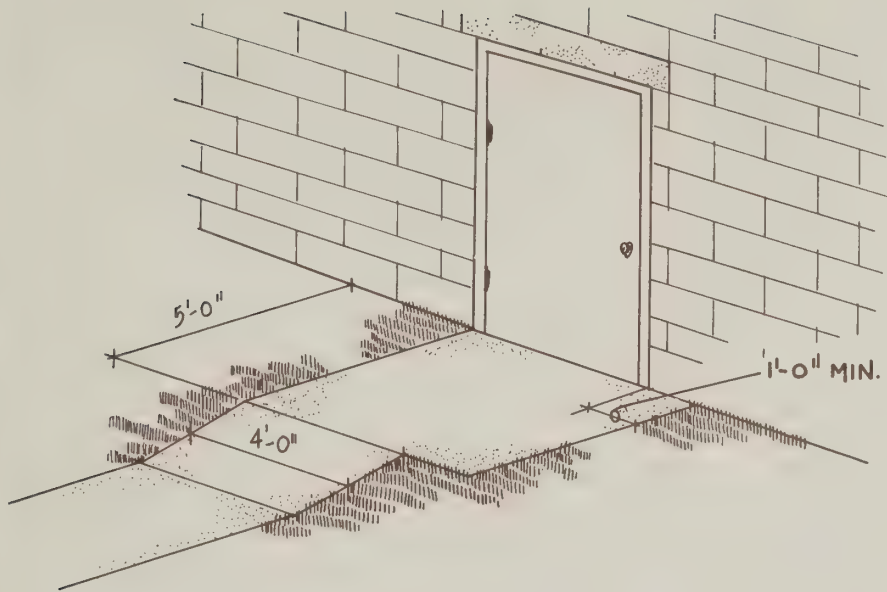
HANDRAILS CAN BE USED AT CURB RAMPS FOR PEDESTRIAN SAFETY. CARE SHOULD BE TAKEN THAT SUCH CURB RAMPS & RAILS DO NOT IN THEMSELVES BECOME A HAZARD TO THE BLIND.



AVOID PLACING CURB RAMPS IN STREET AS ABOVE. DROP OFF AT SIDE IS HAZARDOUS TO ALL UNLESS RAMP IS GREATER THAN 10'0" WIDE WITH SIDES GRADUALLY FEATHERED AT A SLOPE OF 1:20.

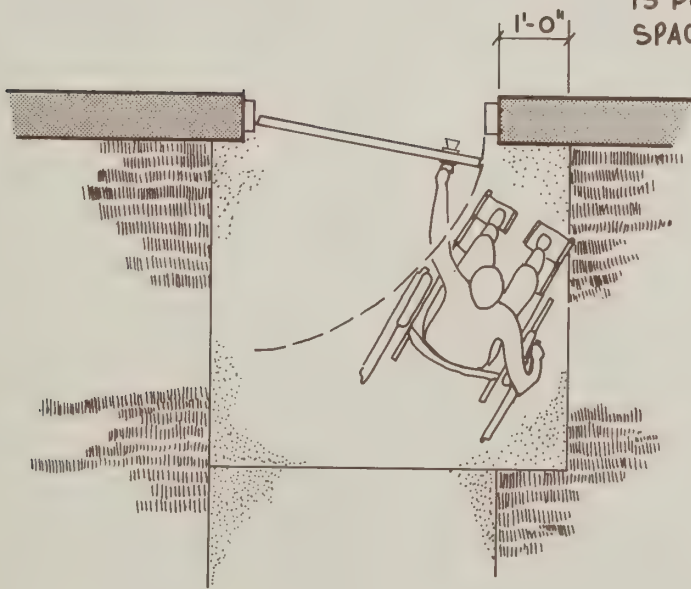
(11x)3.2—walks

- c) All walks provided under (a) and (b) above shall be provided with a level area no less than 5 feet x 5 feet where they terminate at doors. In no case shall such walks extend less than 1 foot beyond the side from which the door opens.

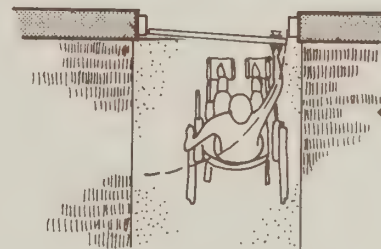


11x3.2(c) WALKS TERMINATING AT DOORS SHALL HAVE A 5'-0" x 5'-0" LEVEL PLATFORM EXTENDING 1'-0" TO THE SIDE FROM WHICH THE DOOR OPENS.

1'-0" DIMENSION HERE IS MINIMAL. WHERE IT IS POSSIBLE, A WIDER SPACE IS MUCH **PREFERRED**.*



THE 1'-0" ALLOWANCE TO THE SIDE OF THE DOOR IS TO ALLOW PERSONS IN WHEELCHAIRS TO MOVE TO THE SIDE OF THE DOOR AND OPEN THE DOOR WITHOUT BACKING THE CHAIR.

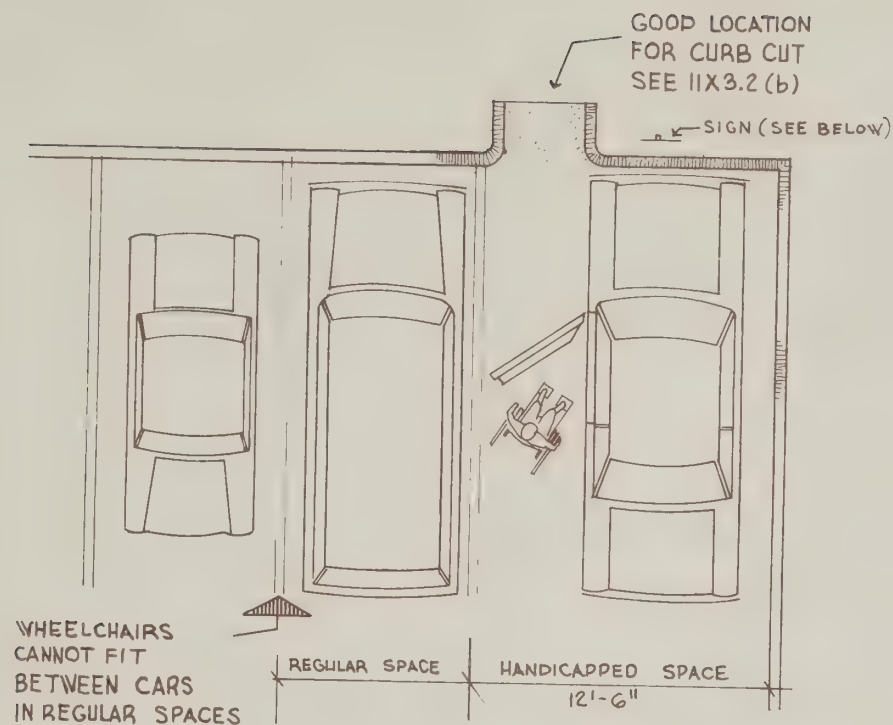


HERE, DOOR CANNOT BE OPENED WITHOUT BACKING THE CHAIR.

(11x)3.3—parking lots

Parking lots provided for buildings to which Section 1.1 applies shall be provided with parking space as follows:

- a) Parking spaces for the handicapped shall be set aside and identified with signs for use by individuals with physical disabilities. The minimum number of assigned spaces shall be as follows:
 - 1) A minimum of one such parking space for the handicapped shall be provided and in addition at least one space per 50 spaces shall be set aside for the handicapped.
- b) Parking spaces identified for the physically handicapped that are placed on the diagonal or vertical shall be a minimum of 12 feet 6 inches wide and shall be located as near as possible to the main public entrance of a single building and centrally located where practical in parking lots that serve more than one building.



THE 2% REQUIREMENT FOR HANDICAPPED PARKING SPACES IS 1 IN 50. THIS IS CONSIDERED TO BE VERY MINIMAL & TWICE THIS AMOUNT IS MUCH **PREFERRED ***.



SUGGESTED SIGNS DISPLAYING THE INTERNATIONAL SYMBOL FOR ACCESSIBILITY

11x3.3 parking lots

11x3.3(a) 2% OF TOTAL NUMBER OF SPACES OR A MINIMUM OF ONE SHALL BE SET ASIDE & DESIGNATED FOR USE OF PHYSICALLY DISABLED.

SUCH PARKING SPACES SHALL BE CLEARLY MARKED BY SIGNS FOR USE OF HANDICAPPED.

11x3.3(b) HANDICAPPED PARKING SPACES SHALL BE A MINIMUM OF 12'-6" WIDE & LOCATED AS NEAR AS POSSIBLE TO BUILDING ENTRANCES OR CENTRALLY LOCATED IN PARKING LOTS BETWEEN BUILDINGS (SEE DESIGNATED WALKWAYS - PAGE 13.)



[11x]4 buildings

(11x)4.1—ramps

Ramps to buildings which Section 1.1 applies to shall conform to the following specifications:

- a) A ramp shall not have a slope greater than 1 foot in 12 feet, or 8.33%, and shall be no less than 4 feet clear width and structurally designed to carry a minimum of 100 pounds per sq. ft. live load when free standing.
- b)
 - 1) If ramp slopes 5% or less and there is no drop off, no handrail will be required.
 - 2) If ramp slope is greater than 5% up to and including 8.33% and there is no drop off, then one handrail will be required.
 - 3) Where ramp drops off on one or both sides, handrails are required on both sides of ramp.
 - 4) Handrails where required shall be 32 inches in height measured from the surface of the ramp, and extend 1 foot beyond the top and bottom of the ramp, or turn at right angles.

(11x) 4 buildings

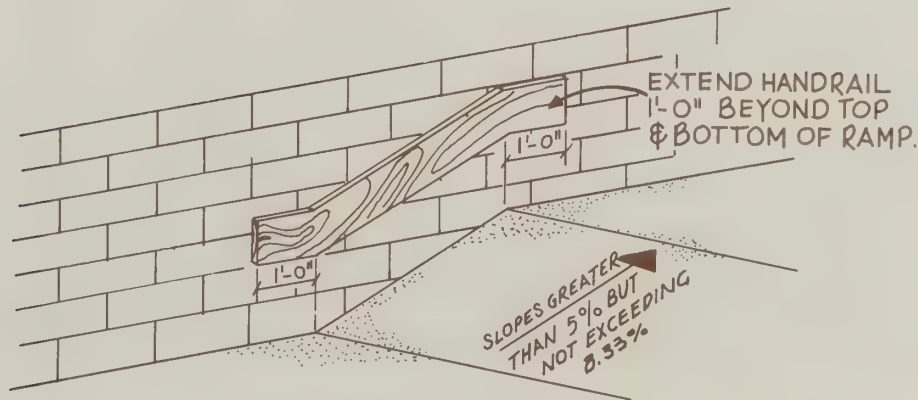
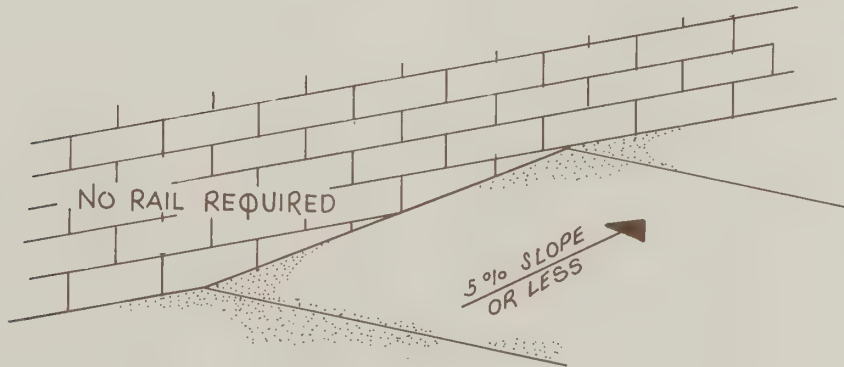
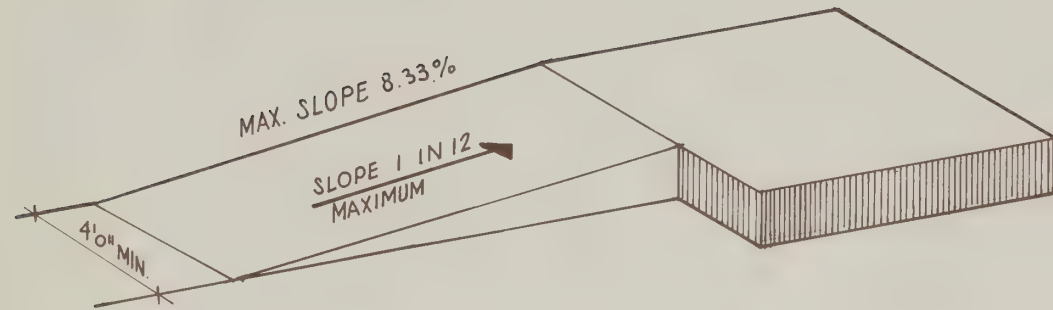
11x4.1 ramps

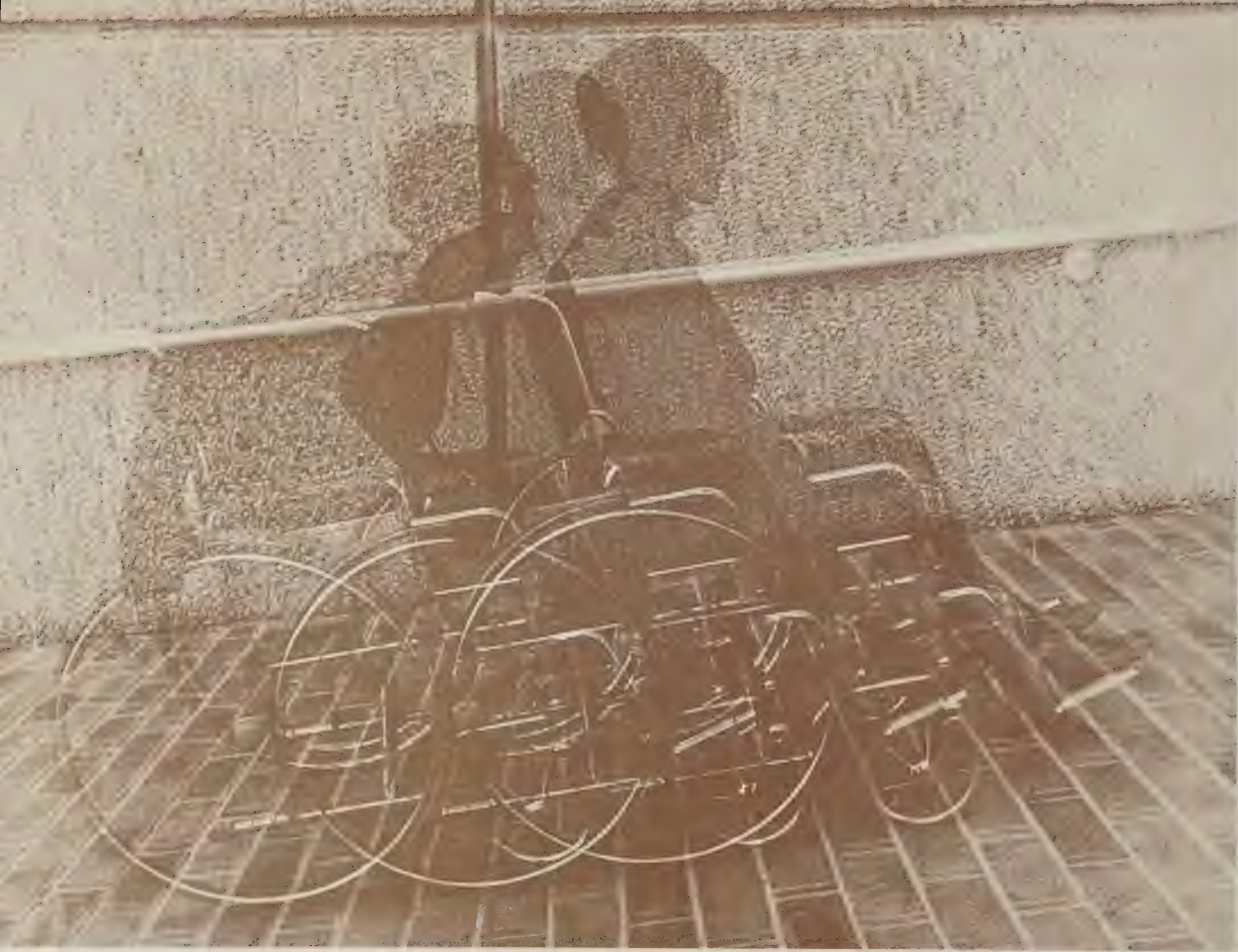
A RAMP IS DEFINED AS A SLOPING WALKWAY WHICH IS ATTACHED TO A BUILDING AS A MEANS OF MOVING FROM ONE FLOOR ELEVATION TO ANOTHER WITHOUT ENCOUNTERING ANY OBSTRUCTION. (SEE 11x2.7-RAMPS)

11x4.1(a) RAMP WIDTH MUST BE AT LEAST 4'-0". RAMP SLOPES MUST NOT BE GREATER THAN 8.33% (1" IN 12")

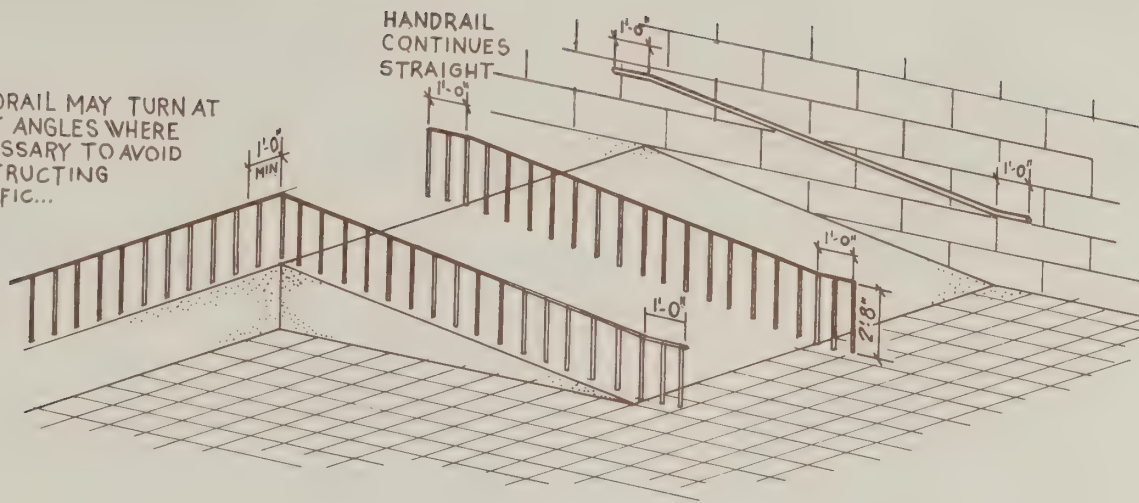
11x4.1(b) IF RAMP SLOPES 5% (1" IN 20") OR LESS, AND THERE IS NO DROP OFF, THEN NO HANDRAIL WILL BE REQUIRED.

11x4.1(b) IF RAMP SLOPE IS GREATER THAN 5%, AND THERE IS NO DROP OFF, THEN ONE HANDRAIL WILL BE REQUIRED. SEE HANDRAIL REQUIREMENTS FOLLOWING.



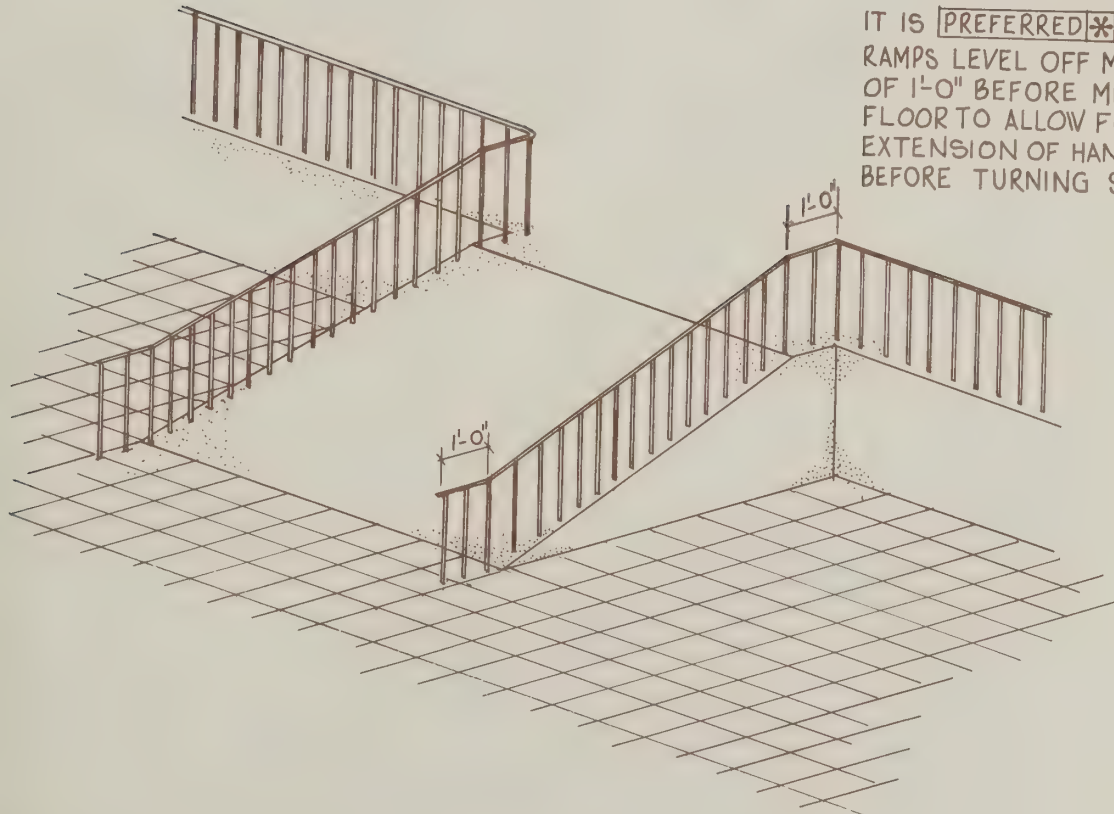


HANDRAIL MAY TURN AT RIGHT ANGLES WHERE NECESSARY TO AVOID OBSTRUCTING TRAFFIC...



11x4.1(b) HANDRAILS, WHERE REQUIRED, SHALL BE CONTINUOUS, SHALL BE SMOOTH, SHALL BE 32" HIGH FROM THE SURFACE OF THE RAMP AND SHALL EXTEND 1'-0" BEYOND THE TOP AND BOTTOM OF THE RAMP, OR TURNED AT RIGHT ANGLES WHERE NECESSARY.

IT IS **PREFERRED** THAT RAMP LEVEL OFF MINIMUM OF 1'-0" BEFORE MEETING FLOOR TO ALLOW FOR 1'-0" EXTENSION OF HANDRAIL BEFORE TURNING 90°.

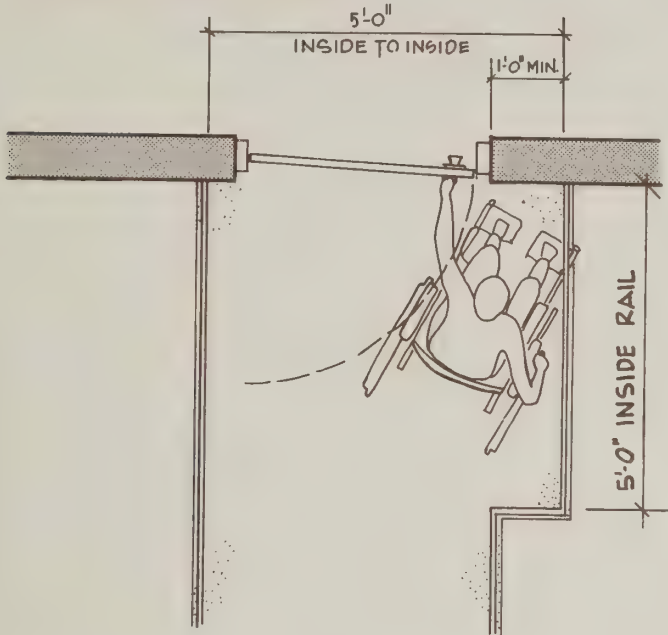


11x4.1(b) WHERE RAMP DROPS OFF ON ONE OR BOTH SIDES, HANDRAILS ARE REQUIRED ON BOTH SIDES OF RAMP.

(11x)4.1—ramps

- c) A ramp shall have a surface that is non-slip.
- d) A ramp shall have a level platform at the top which is at least 5 feet by five feet. This platform shall extend at least 1 foot on the side from which the door opens.
- e) Each ramp shall have at least 5 feet of straight level clearance at the bottom.
- f) Straight run ramps shall have 3 feet minimum long intermediate level platforms at 30 foot intervals for purposes of rest and safety and shall have level platforms wherever they turn, at least as wide as the ramp and 5 feet long (deep).

WHERE RAIL IS REQUIRED AT PLATFORM IT IS **PREFERRED*** THAT 5'-0" X 5'-0" BE AN INSIDE TO INSIDE RAIL DIMENSION.



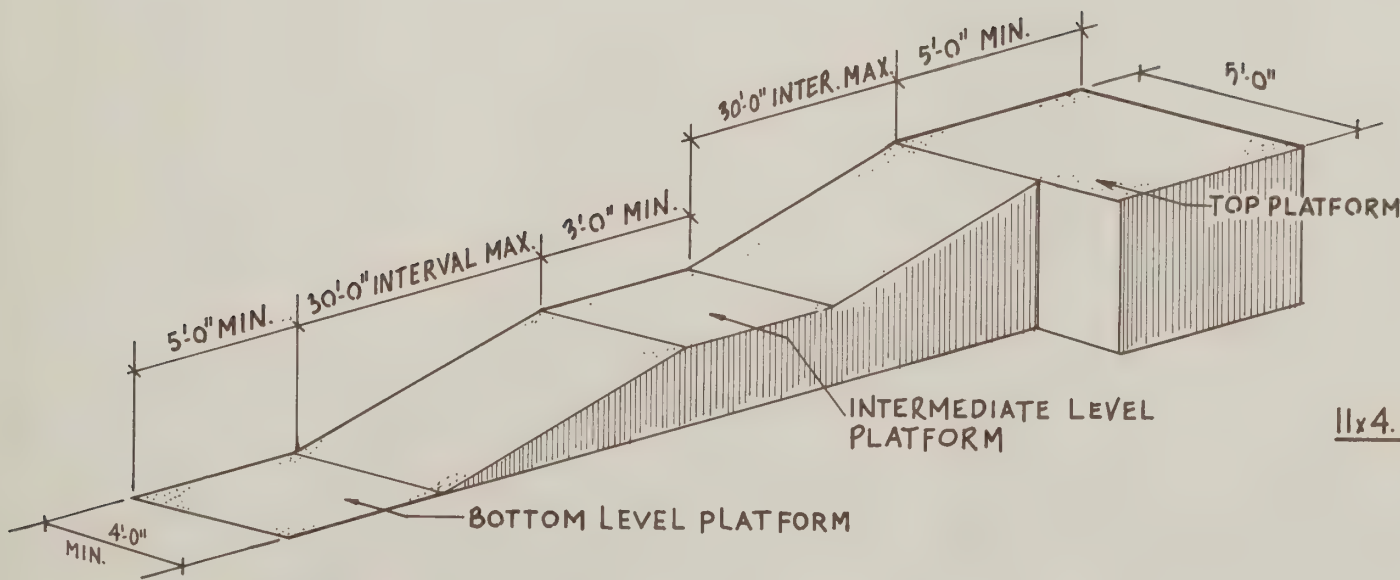
11x4.1(c) RAMPS SHALL HAVE SURFACES THAT ARE NON-SLIP.

BROOM FINISH CONCRETE, CARBORUNDUM GRIT & RUBBER ARE SUITABLE FOR SURFACING MATERIALS.

11x4.1(d) RAMPS SHALL HAVE A LEVEL PLATFORM AT LEAST 5'-0" X 5'-0" THAT SHALL EXTEND MIN. 1'-0" ON THE SIDE FROM WHICH THE DOOR OPENS.

SEE ALSO WALKS 11x3.2(b)

11x4.1(e) RAMPS SHALL HAVE AT LEAST A 5'-0" STRAIGHT LEVEL SURFACE AT THE BOTTOM TO ALLOW STOPPING DISTANCE FOR WHEELCHAIRS.

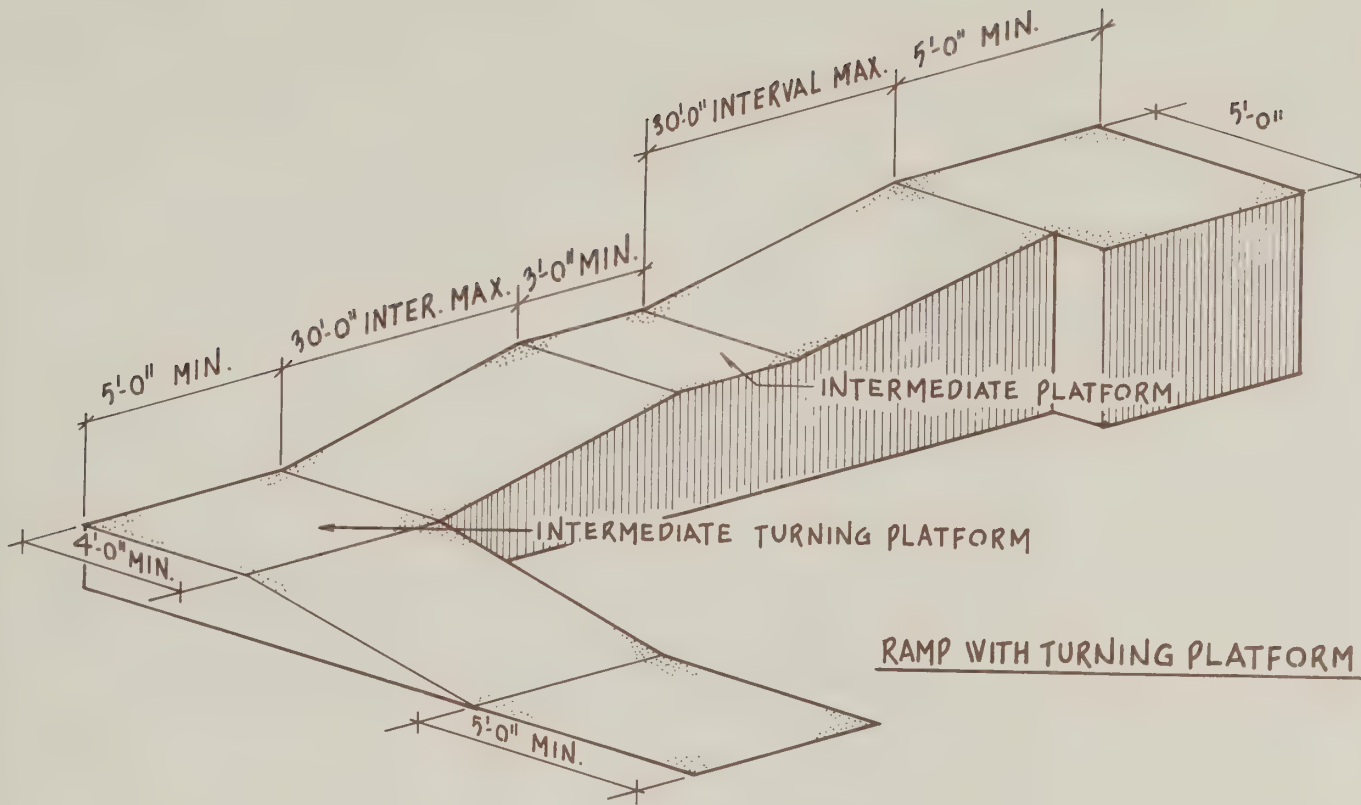


STRAIGHT RUN RAMP

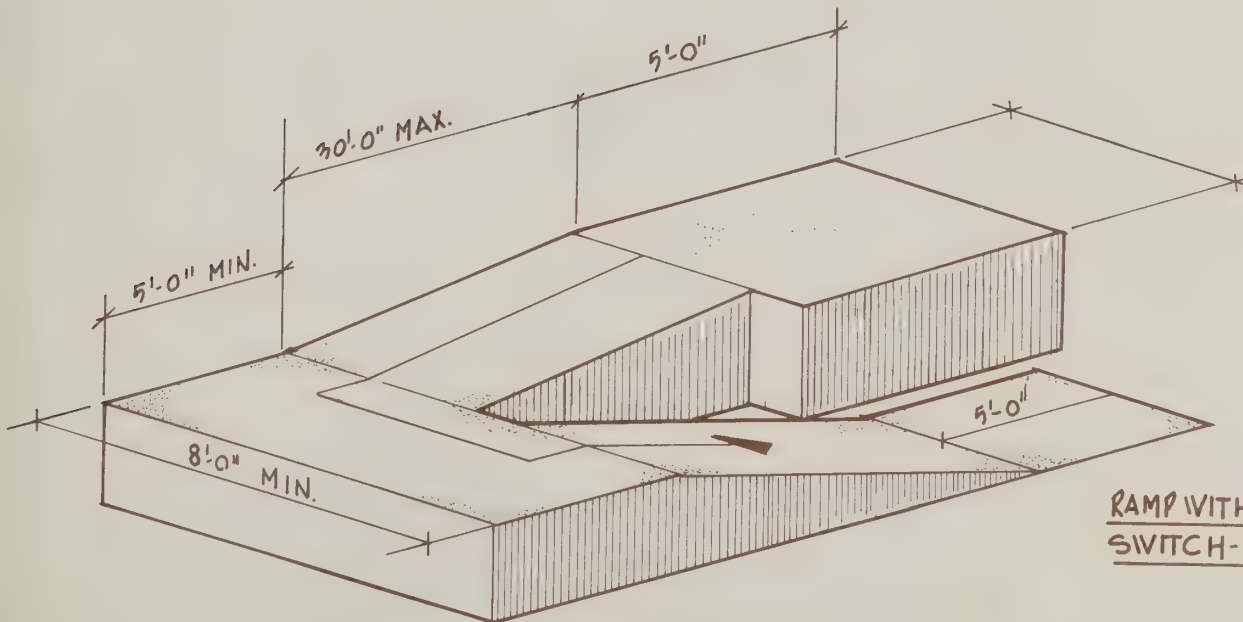
11x4.1(f) RAMPS SHALL HAVE A 3'-0" LONG INTERMEDIATE LEVEL PLATFORM AT 30'-0" INTERVALS FOR REST AND SAFETY.



11x4.1(c,f)
(CONT'D) RAMPs SHALL HAVE LEVEL
PLATFORMS WHEREVER
THEY TURN TO ALLOW
TURNING & STOPPING
SPACE FOR WHEELCHAIRS



RAMP WITH TURNING PLATFORM



RAMP WITH INTERMEDIATE
SWITCH-BACK PLATFORM

(11x)4.2—entrances

All primary entrances usually considered as major points of pedestrian flow to buildings which Section 1.1 applies to shall be usable by the physically handicapped. An entrance to be usable by the physically handicapped must be approached by a continuous common surface (see 11x3.2 walks; 11x4.1 ramps; and 11x4.5 floors), and have wide doors operated by a single effort (see 11x4.3 doors).

11x4.2 entrances

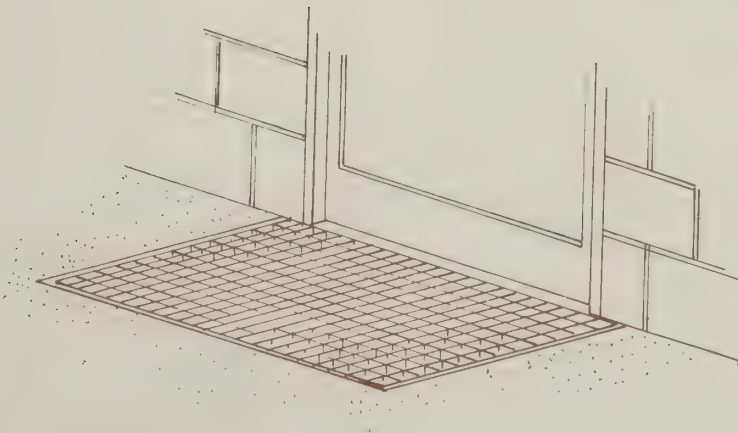
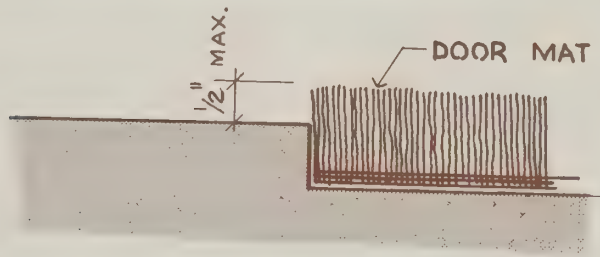
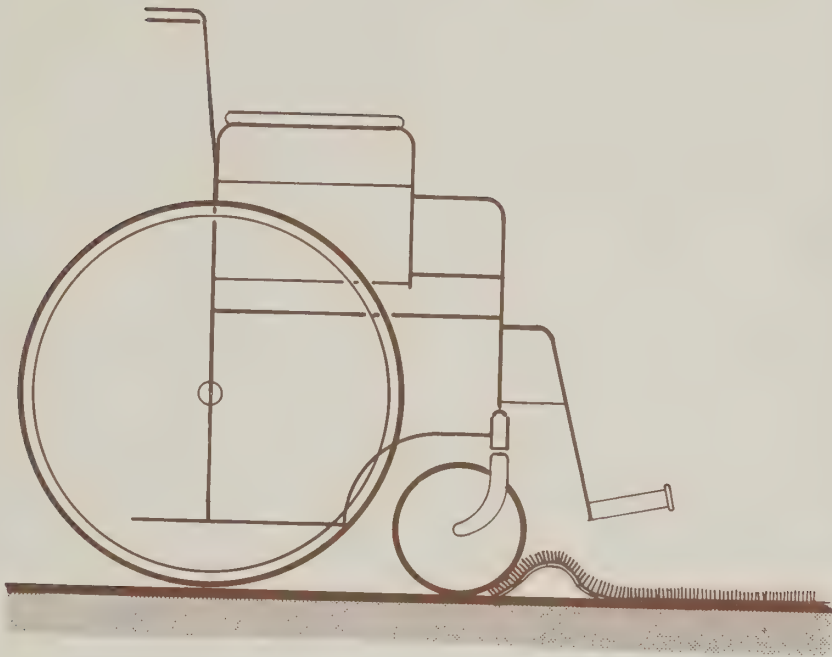
AN ENTRANCE TO BE USABLE BY THE PHYSICALLY HANDICAPPED MUST BE APPROACHED BY A CONTINUOUS COMMON SURFACE (SEE 11x3.2-WALKS, 11x4.1 RAMPs, & 11x4.5 FLOORS), AND HAVE WIDE DOORS OPERATED BY A SINGLE EFFORT (SEE 11x4.3-DOORS).

*** PREFERRED** DOOR MATS & GRATES SHOULD NOT BE BARRIERS

THICK BRISTLY DOOR MATS OF HEMP OR PLASTIC BUNCH UP UNDER SMALL WHEELS OF CHAIRS PRESENTING A FORMIDABLE BARRIER. OFTEN MATS ARE THICKER THAN THE $\frac{1}{2}$ " MAXIMUM ALLOWABLE VERTICAL LEVEL CHANGE (SEE 11x3.2 (b) WALKS).

THICK DOOR MATS (GREATER THAN $\frac{1}{2}$ ") SHOULD BE RECESSED INTO THE SURFACE AT LEAST $\frac{1}{2}$ THEIR THICKNESS OR THIN MATS OF WOVEN RUBBER SHOULD BE USED.

GRATES AT DOORS FOR SNOW AND SAND TRAPS SHOULD BE AVOIDED UNLESS THE MAXIMUM GRID OPENING IS NO MORE THAN $\frac{3}{8}$ " x $\frac{3}{8}$ ". LARGER OPENINGS ARE HAZARDOUS TO THOSE WITH CRUTCHES AND CANES AND MAKE WHEELCHAIR TRAVEL EXTREMELY DIFFICULT.

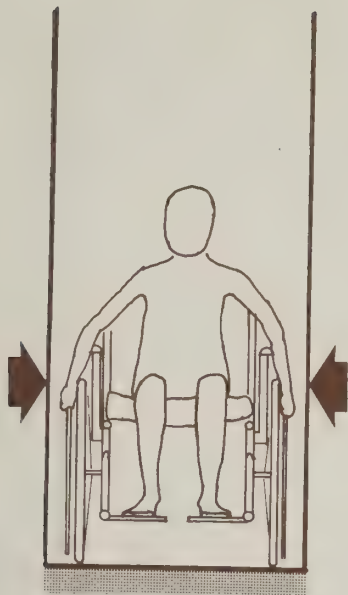




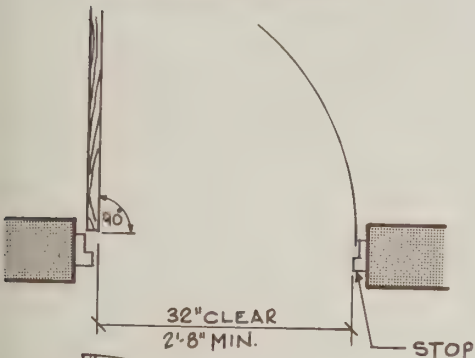
(11x)4.3—doors and doorways

Exterior and interior passage doors for buildings which Section (11X)1.1 applies to shall comply with the following requirements:

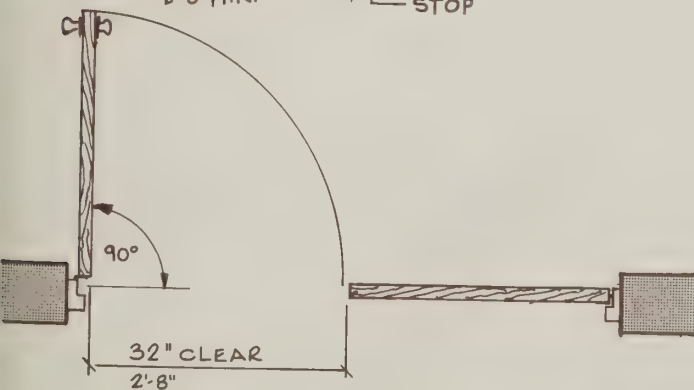
- a) Exterior and interior passage doors shall have a clear opening of no less than 32 inches when the door is open and shall be operable by a single effort with one hand. Two-leaf doors are not usable unless they operate by a single effort, and one of the two leaves meets this requirement.



AN ADULT WHEELCHAIR AVERAGES 27" WIDE. THE REQUIRED 32" CLEAR DOOR WIDTH ALLOWS 2½" CLEARANCE ON EACH SIDE FOR HANDS.



CLEAR OPENING MUST BE BETWEEN THE DOOR IN ITS 90° OPEN POSITION & THE FACE OF THE STOP.



CLEAR OPENING FOR TWO LEAF DOORS MUST BE BETWEEN EITHER DOOR IN ITS 90° OPEN POSITION & THE EDGE OF THE OTHER DOOR.

11x4.3 doors & doorways

11x4.3(a) ALL PASSAGE DOORS MUST HAVE A CLEAR OPENING OF 32" (2'-8") MINIMUM.

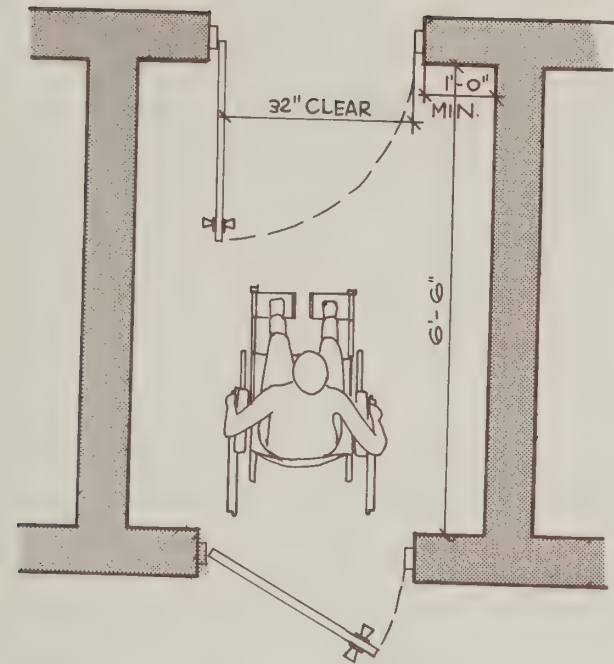
11x4.3(a) TWO LEAF DOORS MUST HAVE ONE LEAF WHICH AFFORDS THE REQUIRED 32" CLEAR OPENING.

REVOLVING DOORS & TURNSTILES SHOULD NOT BE USED UNLESS AUXILIARY DOORS ARE PLACED IMMEDIATELY BESIDE.

11x4.3(a) ALL DOORS MUST OPEN WITH A SINGLE EFFORT: ONLY ONE DOOR SHOULD BE PUSHED WITH ONE HAND TO GET A 32" OPENING.

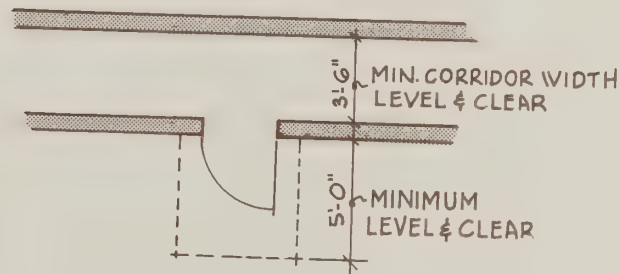
(11x)4.3—doors and doorways

- b) Distance between two doors (e.g. outer and inner) must be a minimum of 6 feet 6 inches.
- c) The floor on the inside and outside of each doorway shall be level and clear for a distance of 5 feet from the door and shall extend one foot beyond the side from which the door opens.

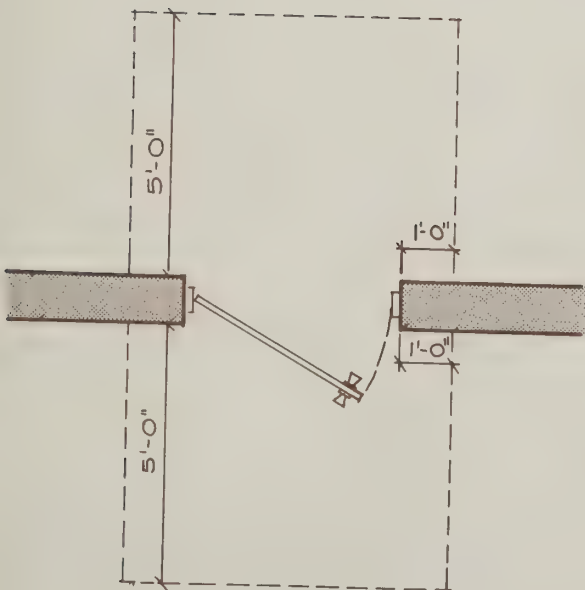


6'-6" SPACE IS NECESSARY TO ALLOW BACKING & TURNING SPACE FOR A WHEELCHAIR TO CLEAR THE INSWINGING DOOR.

WHERE DOORS OPEN ONTO, BUT NOT INTO CORRIDOR, THE REQUIRED LEVEL FLOOR BEYOND THE DOOR MAY BE THE MINIMUM 42" CORRIDOR WIDTH.



5'-0" AREA MUST BE LEVEL TO PREVENT WHEELCHAIRS FROM ROLLING WHEN THE OCCUPANT RELEASES THE WHEEL GRIPS TO REACH FOR DOOR HANDLE.

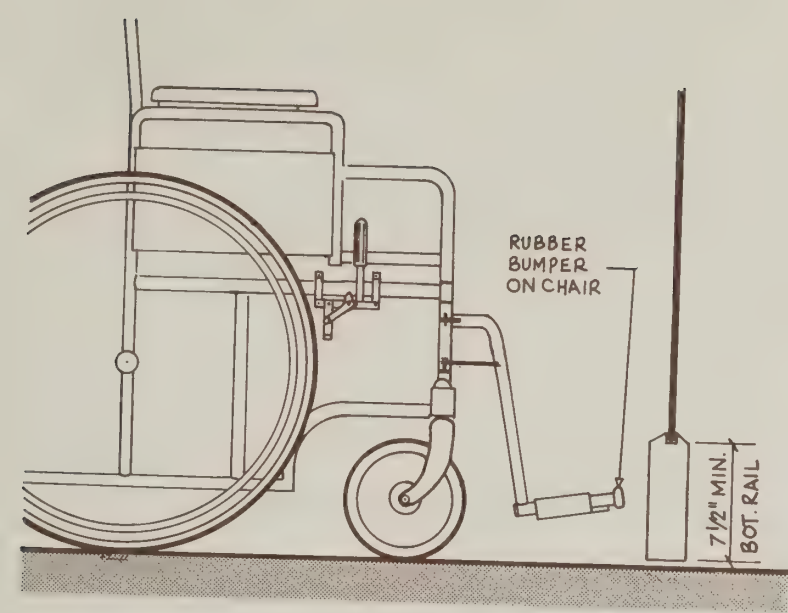


11x4.3(b) THE DISTANCE BETWEEN TWO CONSECUTIVE DOORS MUST BE AT LEAST 6'-6".

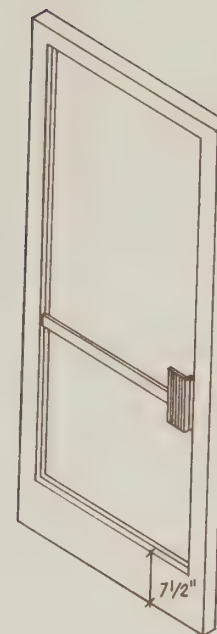
11x4.3(c) THE FLOOR ON THE INSIDE & OUTSIDE OF EACH DOORWAY SHALL BE LEVEL AND CLEAR FOR A 5'-0" DISTANCE FROM THE DOOR, AND SHALL EXTEND 1'-0" TO THE SIDE OF THE DOOR ON THE SIDE OPPOSITE THE HINGES. THIS 1'-0" EXTENSION MUST OCCUR ON BOTH THE INSIDE AND OUTSIDE OF THE DOOR. (SEE 11x 3.2(c) WALKS)

(11x)4.3—doors and doorways

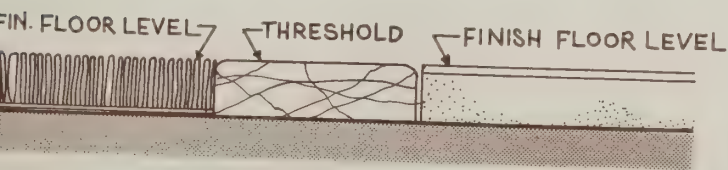
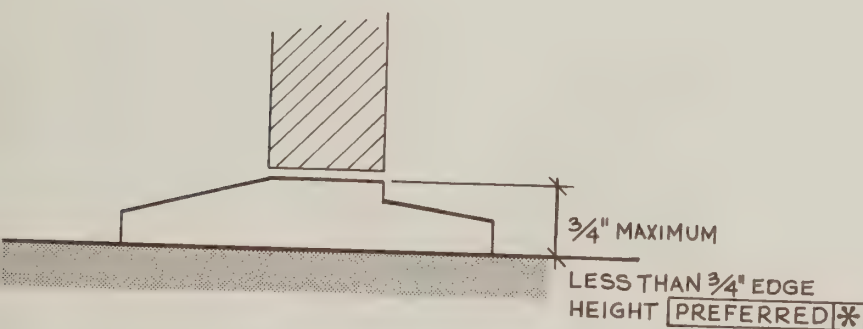
- d) Where narrow stile frame glass doors are used, the bottom rail shall be a minimum height of $7\frac{1}{2}$ inches. Standard narrow frame doors may be used provided glass is protected to a height of $7\frac{1}{2}$ " by an applied panel or insert to provide an adequate pushing surface for wheelchair bumpers.
- e) Exterior thresholds shall be beveled with a maximum edge height of $\frac{3}{4}$ inches. Interior thresholds shall be flush with the floor, or beveled at not more than 5% slope with a maximum edge height of $\frac{1}{2}$ inch.



BOTTOM RAIL OF GLASS DOORS MUST BE LARGE ENOUGH TO ALLOW RUBBER BUMPERS ON CHAIRS TO PUSH THEM OPEN WITHOUT HITTING GLASS OR SCREENING. RAIL SHOULD HAVE SMOOTH SURFACE TO ALLOW BUMPER TO SLIDE ALONG.



11x4.3(d) BOTTOM RAIL OF FRAMED GLASS DOORS MUST BE AT LEAST 7½" HIGH. STANDARD NARROW FRAME DOORS MAY BE USED PROVIDED GLASS IS PROTECTED TO A HEIGHT OF 7½" BY AN APPLIED PANEL OR INSERT TO PROVIDE AN ADEQUATE PUSHING SURFACE FOR WHEELCHAIR BUMPERS.

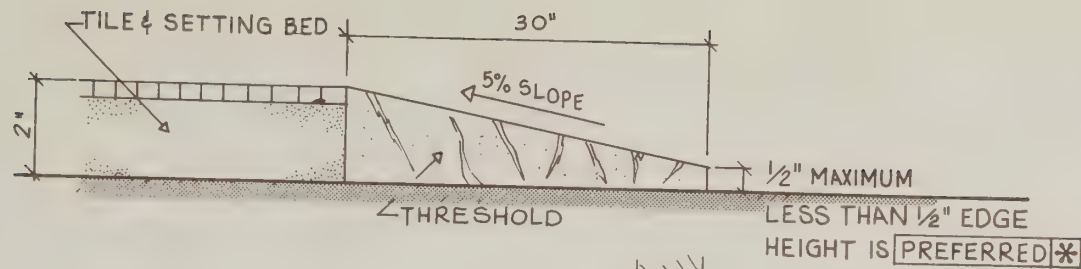


11x4.3(e) THRESHOLDS AT EXTERIOR DOORS SHALL BE BEVELED AND HAVE A MAXIMUM EDGE HEIGHT OF ¾".

THRESHOLDS AT INTERIOR DOORS SHALL BE FLUSH WITH FLOOR OR SLOPED AT NO MORE THAN 5% AND HAVE A MAXIMUM EDGE HEIGHT OF ½".

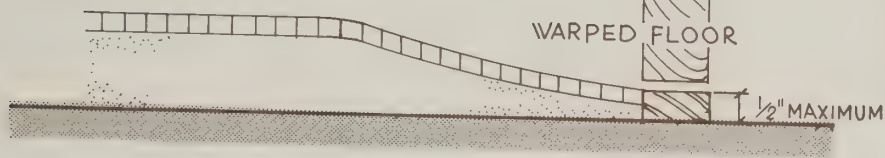
(11x)4.3—doors and doorways

- f) Where door closers are used, the pressure to open a door should not exceed a maximum of 15 pounds. The lightest possible door pressure for use of handicapped people is preferred.
- g) Corridors which serve the above doorways shall be no less than 42" in width.



11x4.3(e) WHERE FLOOR LEVELS (CONT'D) CHANGE, AS IN TOILET ROOMS WHERE TILE SETTING BEDS RAISE THE FLOOR LEVEL, THE REQUIRED 5% SLOPE RESULTS IN A 30" THRESHOLD.

TO AVOID THIS SITUATION, IT IS RECOMMENDED EITHER THAT THE TOILET ROOM FLOOR BE WARPED DOWN, OR THAT THE TOILET ROOM FLOOR BE DEPRESSED IN CONSTRUCTION.

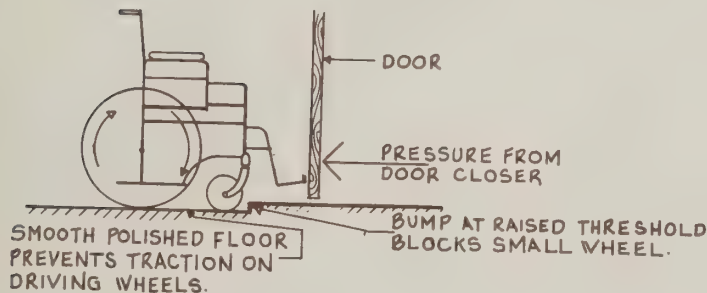


WHERE THE FLOOR IS WARPED AT 5% SLOPE, 5'-0" LEVEL FLOOR AS REQUIRED IN 4.3(c) MAY BEGIN AT THRESHOLD.



11x4.3(f) PRESSURE TO OPEN DOORS WITH CLOSERS SHOULD NOT BE MORE THAN 15 POUNDS.

PREFERRED* TIME DELAY DOOR CLOSERS WHICH HOLD DOOR OPEN FOR UP TO 12 SECONDS, AND AUTOMATIC POWER OPERATED DOORS, SLIDING OR PIVOTING, ARE BOTH STRONGLY RECOMMENDED AT ENTRANCES, MAJOR DOORWAYS AND TOILET ROOMS.



PROBLEM: THE CONDITION ABOVE OFTEN MAKES "HANDICAPPED" TOILET ROOMS INACCESSIBLE TO WHEELCHAIRS.

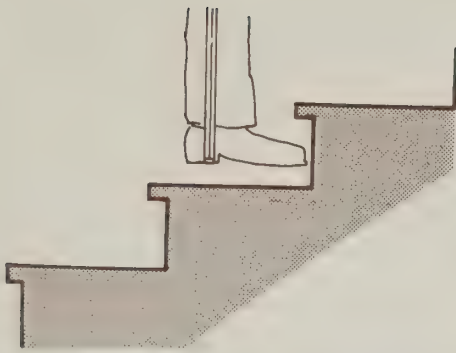
11x4.3(g) CORRIDORS MUST BE NO LESS THAN 42" WIDE.



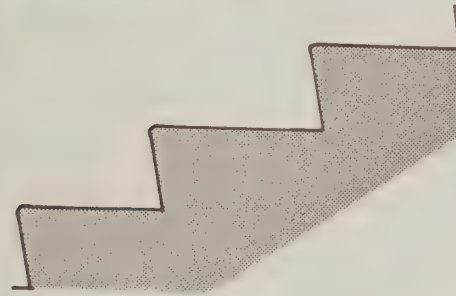
(11x)4.4—stairs

Stairs shall conform to Section 1115 and in buildings which Section 1.1 applies to, the following additional requirements shall be met:

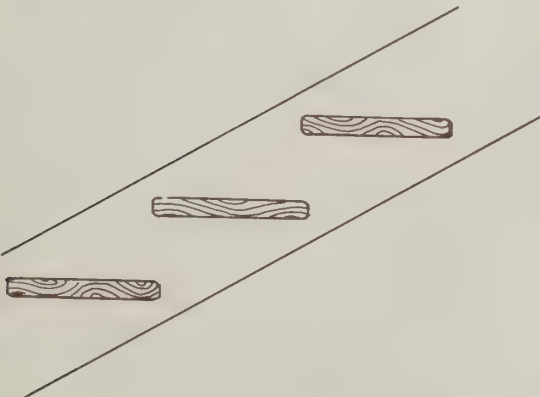
- a) Steps in stairs shall not have abrupt (squared) nosing. One inch rounded nosing is acceptable.



UNACCEPTABLE STAIR
PERSONS WEARING LEG
BRACES OFTEN TRIP
BECAUSE THEY CANNOT
DROP THE TOE TO CLEAR
THE STAIR NOSING.



ACCEPTABLE STAIRS
WITH VERTICAL OR SLANTED
RISERS.



OPEN RISER STAIR

THE CODE IS INTENDED TO
PROVIDE SAFE & ADEQUATE
STAIRS FOR HANDICAPPED
PEOPLE & IS NOT INTENDED
TO ELIMINATE DECORATIVE
OPEN RISER STAIRS, WHICH,
FOR THE REASONS STATED
ABOVE, ARE A HAZARD TO
PERSONS WEARING LEG
BRACES.

HOWEVER, OPEN RISER STAIRS,
WHERE ALLOWED BY OTHER
SECTIONS OF THE BUILDING
CODE, SHOULD NOT BE
PROHIBITED IN BUILDINGS
WHICH HAVE, ON THE SAME
FLOOR, RAMPS, STAIRS, OR
ELEVATORS THAT COMPLY
WITH THE CODE.

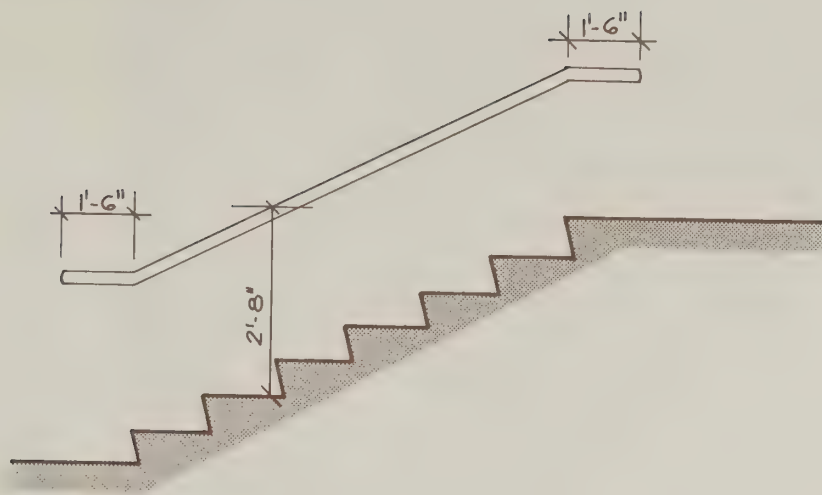
11x4.4 stairs

STAIRS MUST COMPLY WITH
SECTION 1115 AND THE
FOLLOWING.

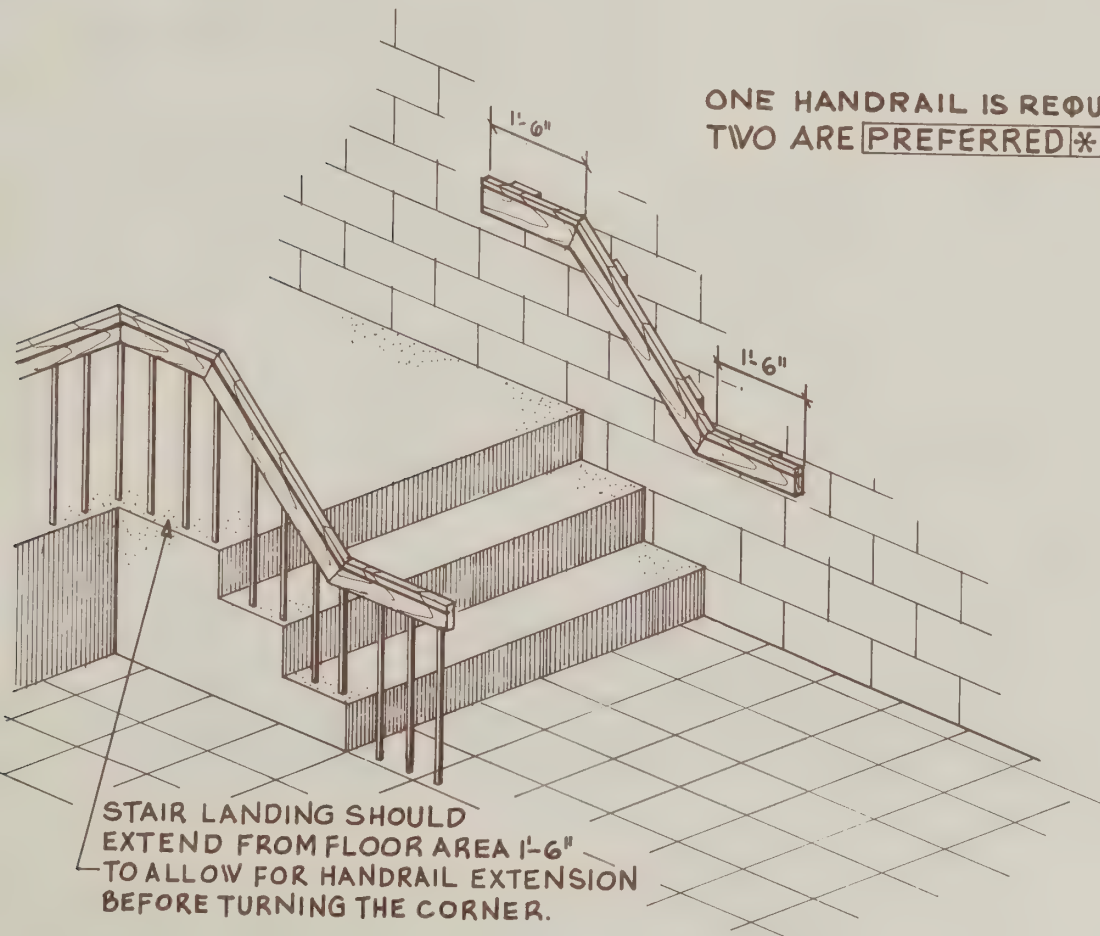
11x4.4(a) STEPS IN STAIRS SHALL
NOT HAVE ABRUPT
(SQUARED) NOSINGS.

(11x)4.4—stairs

- b) Stairs shall have at least one continuous handrail 32 inches as measured from the tread at the face of the riser.
- c) Stairs shall have at least one continuous handrail that extends at least 18 inches beyond the top step and beyond the bottom step or turned at right angles. Care shall be taken that the extension of the handrails is not in itself a hazard and the extensions should be made on the side of a continuing wall.



11x4.4(b) STAIRS SHALL HAVE AT LEAST ONE CONTINUOUS HANDRAIL 32" ABOVE THE TREADS MEASURED AT THE FACE OF THE RISERS.

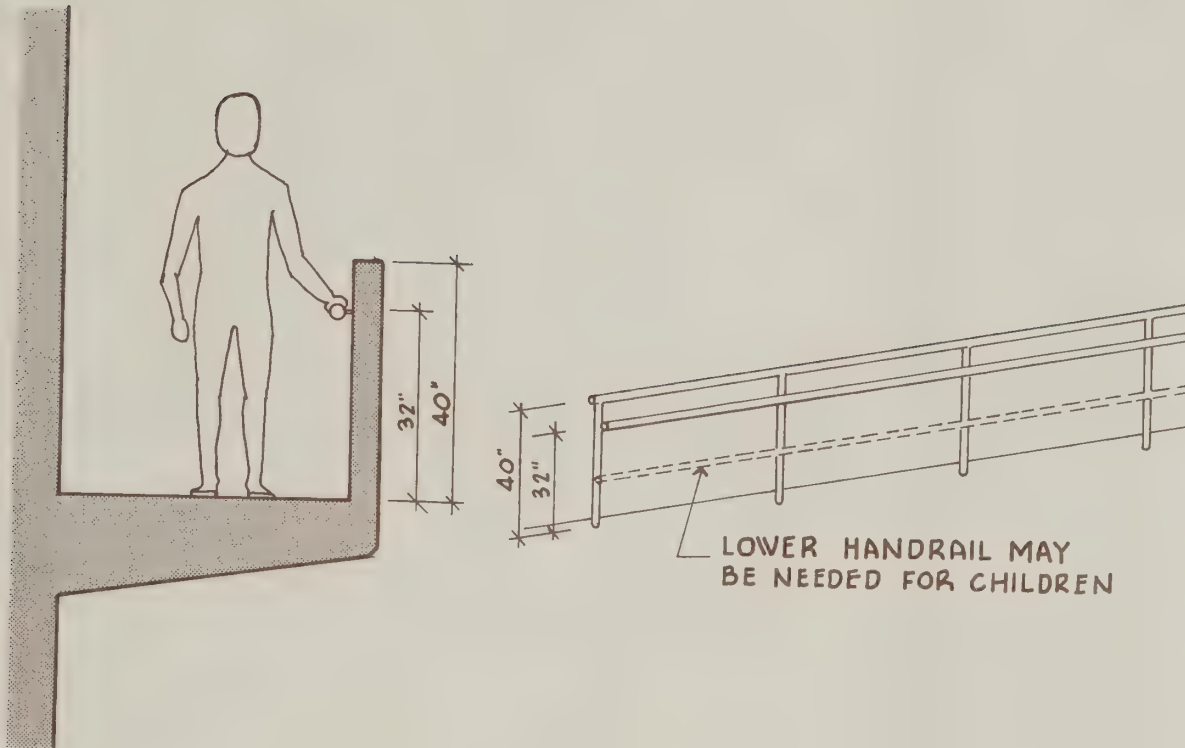


11x4.4(c) STAIRS SHALL HAVE AT LEAST ONE CONTINUOUS HANDRAIL WHICH EXTENDS 1'-6" BEYOND THE TOP & BOTTOM OF THE STAIR OR TURNS AT RIGHT ANGLES.

CARE SHALL BE TAKEN THAT THE EXTENSION OF THE HANDRAILS IS NOT IN ITSELF A HAZARD, AND THE EXTENSION SHOULD BE ON THE SIDE OF A CONTINUING WALL.



11x4.4(c) WHERE OTHER SECTIONS OF THE CODE REQUIRE RAILINGS TO BE 40" HIGH, AS AT BALCONIES, AN AUXILIARY HANDRAIL MUST BE INSTALLED 32" ABOVE THE FLOOR.



THIS TYPE IS DIFFICULT TO GRIP



WHERE NARROW, DEEP HANDRAILS ARE USED, CONSIDERATION SHOULD BE GIVEN TO SHAPING HANDRAILS SO AS TO PROVIDE EASIER GRIP FOR PERSONS WITH LIMITED GRIPPING POWER.



GROOVES ALLOW BETTER GRIPPING





(11x)4.5—floors

- a) Floors on a given story shall be a common level throughout or be connected by a ramp in accord with (11X)4.1(a) through (11X)4.1(f), inclusive except that thresholds meeting requirements of 4.3(e) may be used. Stages, balconies and bleachers are not required to conform to this requirement.

EXAMPLE 1: There shall not be a difference between the level of the floor of a corridor and the level of the floor of the toilet rooms, unless proper ramps are provided. Consideration should be given to depressing toilet floor construction if ceramic tile is used to provide for common level.

EXAMPLE 2: There shall not be a difference between the level of the floor of a corridor and the level of a meeting room, dining room, or any other room, unless proper ramps are provided.

11x4.5 floors

11x4.5 (a) FLOORS ON A GIVEN STORY SHALL BE A COMMON LEVEL THROUGHOUT OR BE CONNECTED BY A RAMP IN ACCORDANCE WITH 11x4.1 (a-f).

STAGES, BALCONIES & BLEACHERS ARE NOT REQUIRED TO MEET THIS REQUIREMENT (EXCEPT IN FEDERALLY FUNDED PROJECTS. SEE PUBLIC LAW 90-480)



LOWERED FLOOR AREA MUST HAVE RAMP ACCESS. SEE 11x4.1

EXAMPLE 1: SEE 11x4.3(e)
DOORS PAGES 39-41

EXAMPLE 2: SEE ABOVE

WHERE SMALL RAISED PLATFORM SEATING IS PROVIDED WITHIN A ROOM FOR SPECIFIC FACILITIES, AS IN RESTAURANTS AND LOUNGES, PLATFORMS NEED NOT BE ACCESSIBLE TO WHEELCHAIRS IF THE SAME FACILITIES ARE AVAILABLE AT THE MAIN FLOOR LEVEL IN THE SAME AREA.

HOWEVER IT IS **PREFERRED*** THAT SOME OF THESE PLATFORMS BE ACCESSIBLE.

(11x)4.6—toilet rooms

On every floor where toilet rooms are planned in every building to which Section 1.1 applies, one toilet room for men and one toilet room for women shall have at least one fixture of each type provided, to meet the requirements of this Section (4.6). Each building shall have a minimum of 2% of total fixtures of each type to meet the requirements of this Section (4.6).

Toilet rooms with group facilities shall have at least one fixture of each type to meet the requirements of section 4.6 (a) through (j).

Where toilet rooms do not have group facilities but are single individual toilet rooms, the toilet room itself shall be considered the toilet stall as well as a toilet room, and at least one such room for men and one such room for women shall meet the requirements of 4.6 (a), (b)3, 4, 5, (c), (d), (e), (g), (h), (i), (j).

11x4.6 toilet rooms

ON EVERY FLOOR WHERE TOILET ROOMS ARE PLANNED, ONE TOILET ROOM FOR MEN AND ONE FOR WOMEN MUST PROVIDE AT LEAST ONE FIXTURE OF EACH TYPE ACCESSIBLE TO THE PHYSICALLY HANDICAPPED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION (11x4.6).

A MINIMUM OF ONE FIXTURE OF EACH TYPE PER TOILET ROOM OR 2% OF TOTAL FIXTURES,WHICHEVER IS GREATER, MUST BE ACCESSIBLE TO THE HANDICAPPED.

TOILET ROOMS WITH GROUP FACILITIES MUST HAVE AT LEAST ONE FIXTURE OF EACH TYPE TO MEET THE REQUIREMENTS OF THE CODE.

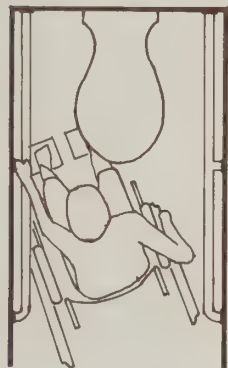
WHERE TOILET ROOMS DO NOT HAVE GROUP FACILITIES BUT ARE SINGLE INDIVIDUAL TOILET ROOMS,THE TOILET ROOM ITSELF SHALL BE CONSIDERED AS THE TOILET STALL,AND AT LEAST ONE SUCH ROOM FOR MEN AND ONE SUCH ROOM FOR WOMEN SHALL MEET THE REQUIREMENTS OF THE CODE.

EVERYTHING YOU ALWAYS WANTED TO KNOW
ABOUT HANDICAPPED TOILETS BUT WERE
AFRAID TO ASK.

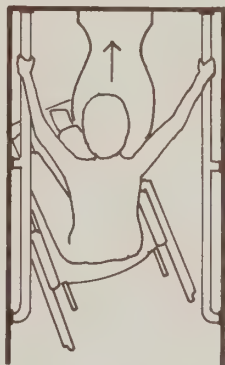


HANDRAIL USE AND TRANSFER TECHNIQUES

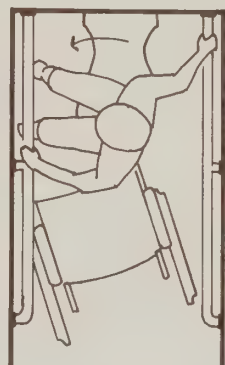
1
ENTERS STALL,
TURNS AT AN
ANGLE PLACING
FOOTRESTS &
FEET TO ONE
SIDE OF THE
WATER CLOSET.



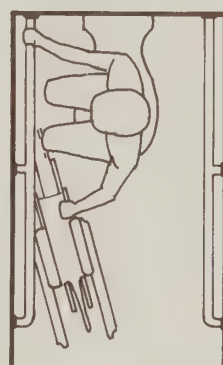
2
LEANS FORWARD
PLACING HANDS
ON RAILS NEAR
WALL & PULLS
TORSO FORWARD
SLIDING ONTO
SEAT IN SIDEWAYS
POSITION.



3
SWITCHES RIGHT
HAND FROM RIGHT
RAIL TO LEFT
ARRIVING IN SIDE
SEATED POSITION
AS IN 4.



4
MAINTAINS HIS
BALANCE WITH
RIGHT HAND
WHILE USING
LEFT TO FOLD
CHAIR OR PUSH
IT BACK.



5
WITH CHAIR
FOLDED OR
PUSHED BACK,
SWINGS LEGS
AROUND TO
FRONT, SWITCHING
LEFT HAND TO
OPPOSITE RAIL.

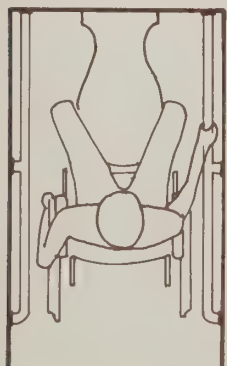


TECHNIQUE FOR TRANSFER FROM WHEELCHAIR TO W.C. IN STALLS

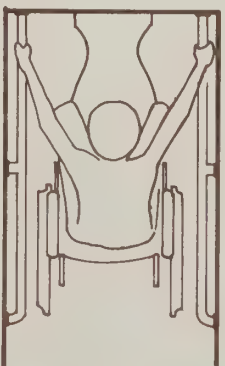
THIS METHOD IS DIFFICULT OR IMPOSSIBLE FOR MANY PERSONS WITHOUT EXTENSIVE TRAINING.

ALTERNATE METHOD

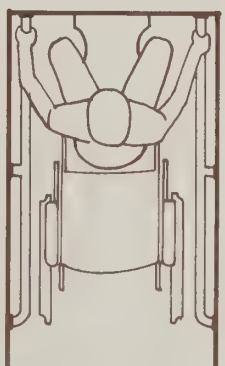
1
ENTERS STALL
STRAIGHT IN &
PULLS CHAIR
UP TO SEAT
PLACING LEGS
TO EACH SIDE OF
WATER CLOSET



2
LEANS FORWARD
PLACING HANDS
ON BARS NEAR
WALL. PULLS
TORSO FORWARD
SLIDING ONTO
SEAT.



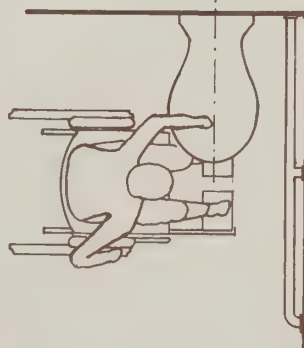
3
REMAINS IN
"BACKWARD"
POSITION FACING
WALL.



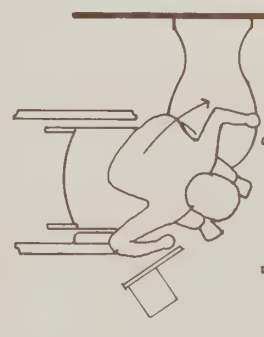
SIDE APPROACH METHOD

1
APPROACHES
WATER CLOSET
FROM SIDE

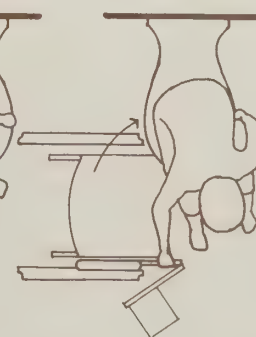
REQUIRES 2'-6" MIN.
TO ϕ OF W.C.



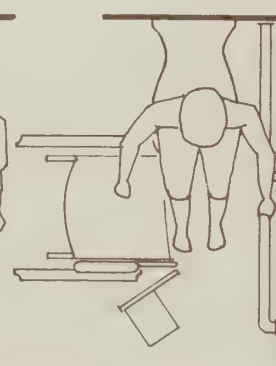
2
REMOVES ARM
REST & SWINGS FOOT
REST TO SIDE. PLACES
ONE HAND ON W.C.
SEATOR GRAB BAR
& OTHER ON CHAIR



3
WITH A LIFTING
& SLIDING
MOTION SHIFTS
TORSO ONTO
W.C. SEAT



4
MAINTAINS
BALANCE BY
USING GRAB
BAR & WHEEL-
CHAIR.



THIS METHOD ALSO DIFFICULT OR IMPOSSIBLE FOR MANY.

THIS METHOD CAN BE DONE BY MOST HANDICAPPED PEOPLE.
STALLS ALLOWING SPACE FOR THIS METHOD ARE **PREFERRED** *

(11x)4.6—toilet rooms

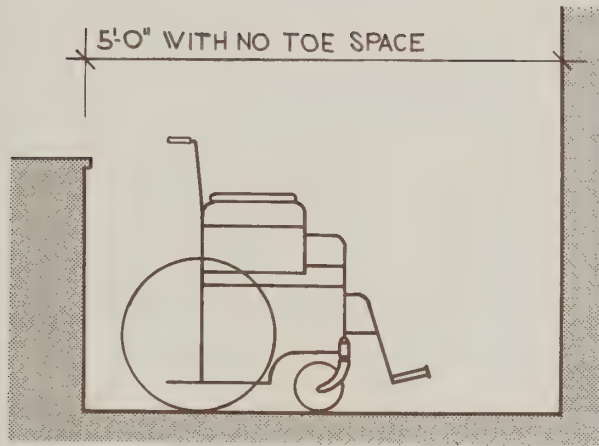
- a) A minimum of 5 feet x 5 feet clear floor space shall be provided and the entrance door shall be located on one side of this clear width and open out or slide. Where total available floor space is a particularly crucial concern, and where toe space is provided under cabinets, toe space of no more than 6 inches in depth and a minimum of $8\frac{3}{4}$ inches in height on any one side, can be allowed to supplant part of the 5 feet x 5 feet clear floor space.

EXAMPLE: If toe space $8\frac{3}{4}$ inches in height and 6 inches in depth were provided under cabinets on two opposite sides of the toilet room, the remaining clear floor space in addition to the toe space is 4 feet x 4 feet. However, if the depth of the toe space is 12 inches on each of two opposite sides of a toilet room, the additional clear floor space would still have to be 4 feet x 4 feet.

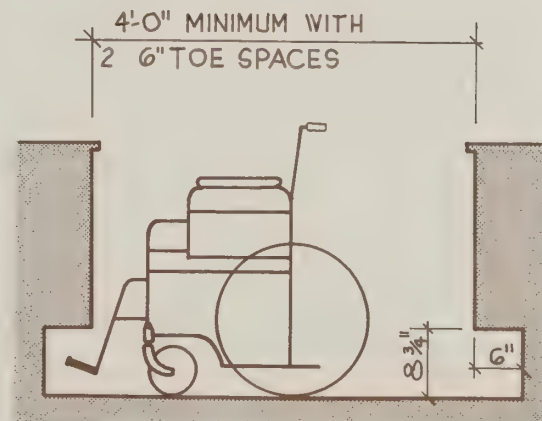
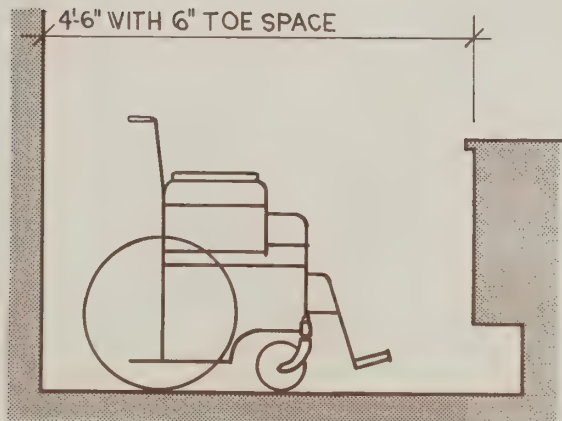
minimum requirements for toilet rooms with group facilities (multiple fixtures)
includes 11x4.6(a) through 11x4.6(j).

11x4.6(a) CLEAR FLOOR SPACE :

MINIMUM CLEAR FLOOR SPACES IN TOILET ROOMS BETWEEN WALLS, WALLS & CABINETS, FIXTURES & WALLS, CABINETS & CABINETS, MUST BE 5'-0" UNLESS A TOE SPACE OF 6" DEPTH & 8¾" HEIGHT IS PROVIDED ON ONE OR BOTH SIDES, IN WHICH CASE MINIMUM CLEAR FLOOR SPACE MAY BE 4'-0" x 4'-0".



CLEAR FLOOR SPACE OF 5'-0" IS REQUIRED TO ALLOW SUFFICIENT TURNING SPACE FOR WHEELCHAIRS.



(11x)4.6—toilet rooms

b) Toilet rooms shall have at least one toilet stall that meets the following requirements:

- 1) Is at least 3 feet wide.
- 2) Is at least 6 feet deep. Note: 5 feet deep stall may be used if wall hung water closets are used.
- 3) Doors shall have a clear opening of not less than 32 inches when open, shall swing out or slide, and shall be operable by a single effort.
- 4) Has a water closet with the seat 20 inches from the floor. Water closets for small children such as elementary school students shall meet the requirements for their use.

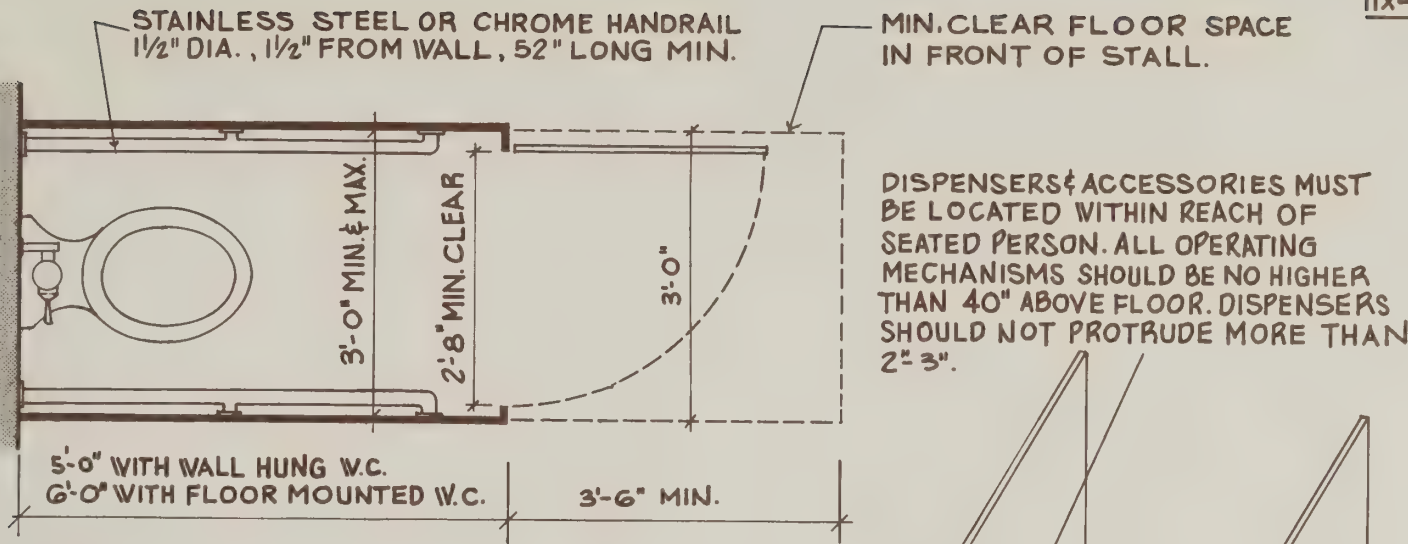
Note: Standard 18 inch water closet may be used provided 2 inch filler attachment is used under seat to bring it to 20 inches.

- 5) Has stainless or chrome plated steel handrails on each side wall. Each handrail shall be 33 inches high and 54 inches long. Each handrail shall be parallel to the floor, 1½ inches in outside diameter, shall have 1½ inch clear space between rail and wall, and be fastened securely at ends and center to support a 250 pound load.
- 6) Has a minimum clear floor space of 42 inches in depth and 36 inches in width in front of the stall door.

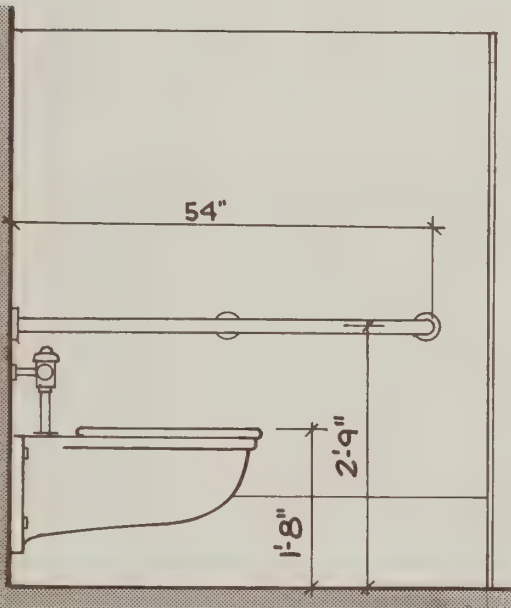
11x4.6(b) TOILET STALLS

AT LEAST ONE TOILET STALL IN EACH TOILET ROOM MUST MEET THE REQUIREMENTS OF 11x4.6(b) 1-6.

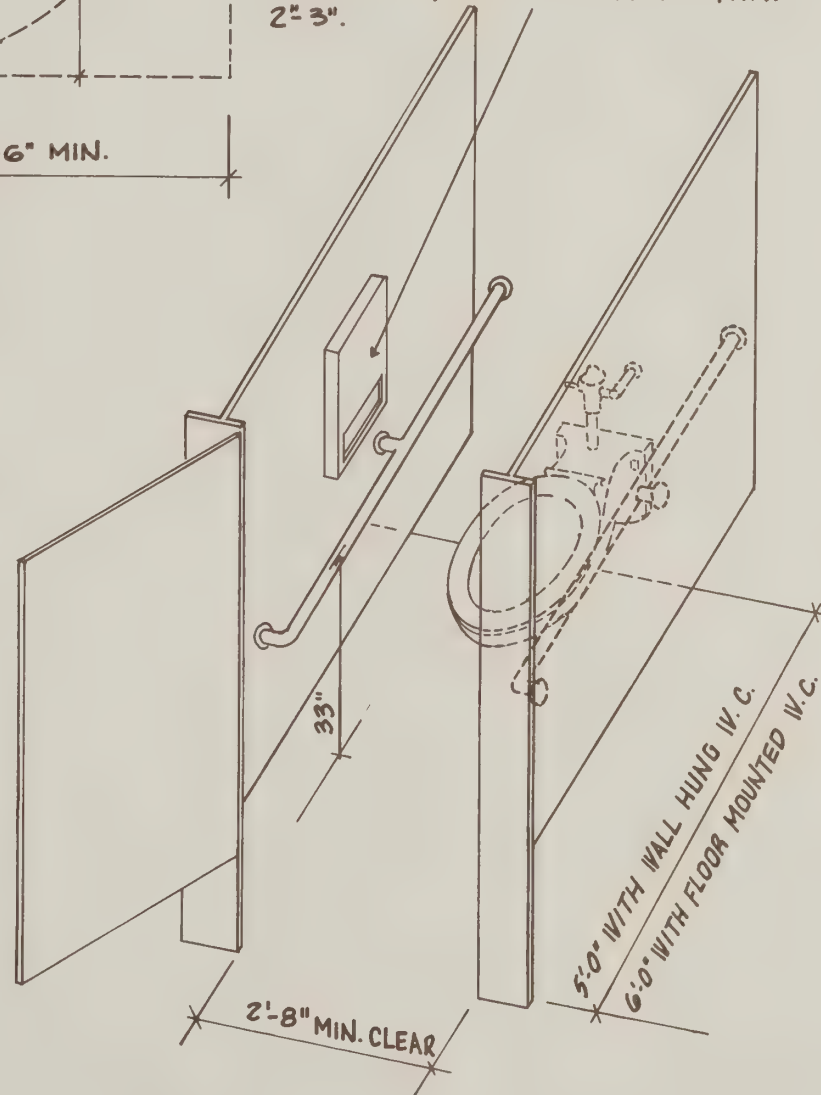
1. STALL SHALL BE 3'-0" WIDE.
2. STALL SHALL BE 6'-0" DEEP WHEN FLOOR MOUNTED WATER CLOSET IS USED, OR 5'-0" DEEP IF WALL MOUNTED FIXTURE IS USED.
3. DOORS SHALL HAVE A CLEAR OPENING OF 32" MINIMUM AND SHALL SWING OUT OR SLIDE.
4. TOILET SEAT, NOT RIM, SHALL BE 20" FROM FLOOR. STANDARD 18" FLOOR MOUNTED W.C. MAY BE USED IF 2" SPACER RING IS INSTALLED UNDER SEAT TO RAISE IT TO 20" HEIGHT. TOILETS FOR SMALL CHILDREN WILL MEET THEIR REQUIREMENTS.
5. HANDRAILS 1 1/2" IN OUTSIDE DIAMETER AND 54" LONG SHALL BE INSTALLED ON EACH WALL PARALLEL TO FLOOR AND 1 1/2" FROM WALL, 33" FROM FLOOR. RAILS SHALL BE STAINLESS STEEL OR POLISHED CHROME AND MOUNTED AT ENDS AND CENTER TO SUPPORT A 250 POUND LOAD.
6. THERE SHALL BE A MIN. CLEAR SPACE 42" DEEP AND 36" WIDE IN FRONT OF THE STALL DOOR.



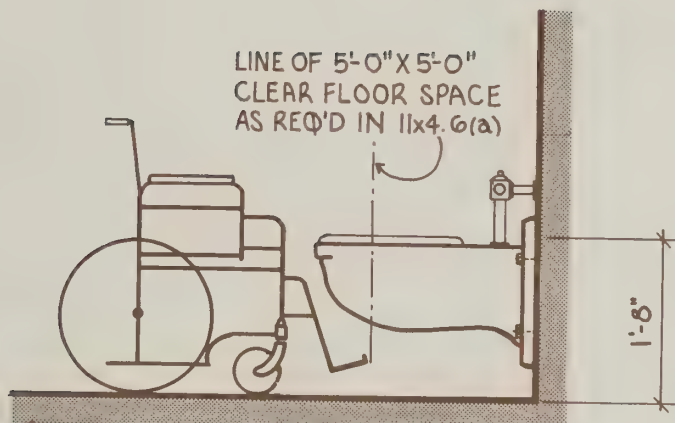
PLAN



ELEVATION - FIXTURE HEIGHTS

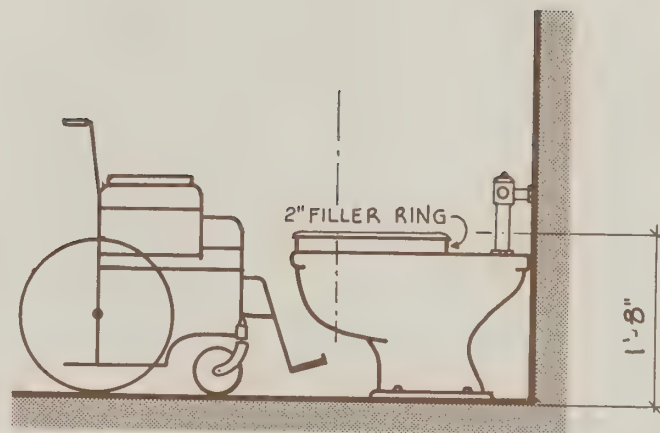


TOILET FIXTURE SELECTION



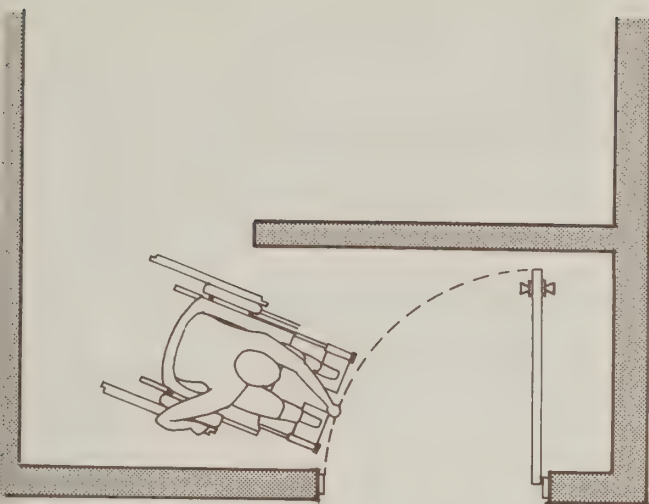
WALL HUNG FIXTURES ARE **PREFERRED*** TO ALLOW TOE SPACE FOR WHEELCHAIR FOOTRESTS TO FACILITATE APPROACH TO SEAT. WALL HUNG FIXTURE CAN EASILY BE SET WITH SEAT 20" ABOVE FLOOR.

REQUIRED 6'-0" DEEP STALL MAY BE REDUCED TO 5'-0" IF WALL HUNG WATER CLOSET IS USED. (SEE 4.6(b)2).

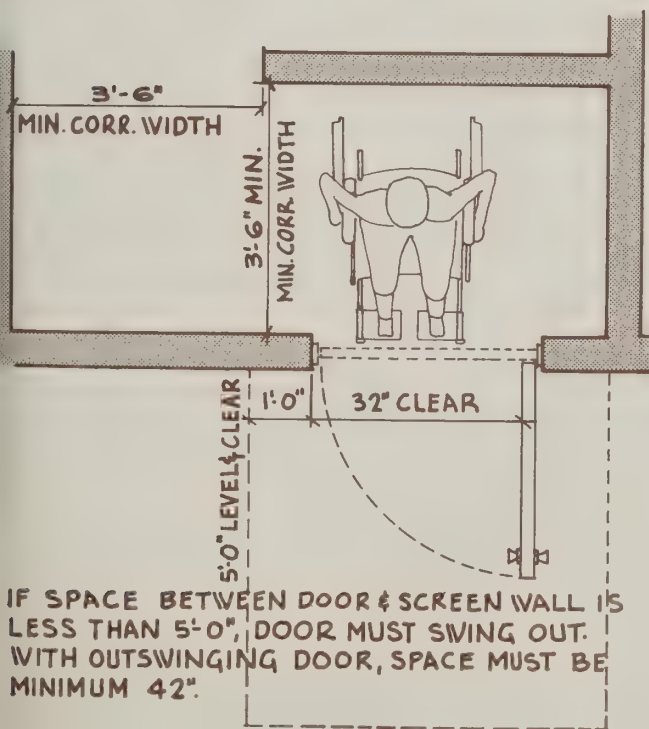


FLOOR MOUNTED WATER CLOSETS MUST HAVE A DEEPLY RECESSED BASE FOR FOOTRESTS. STANDARD 18" WATER CLOSET MAY BE USED IF 2" FILLER RING IS INSTALLED TO RAISE SEAT TO 1'-8" HEIGHT TO MATCH WHEELCHAIR SEAT HEIGHT. (SEE 4.6(b)4)

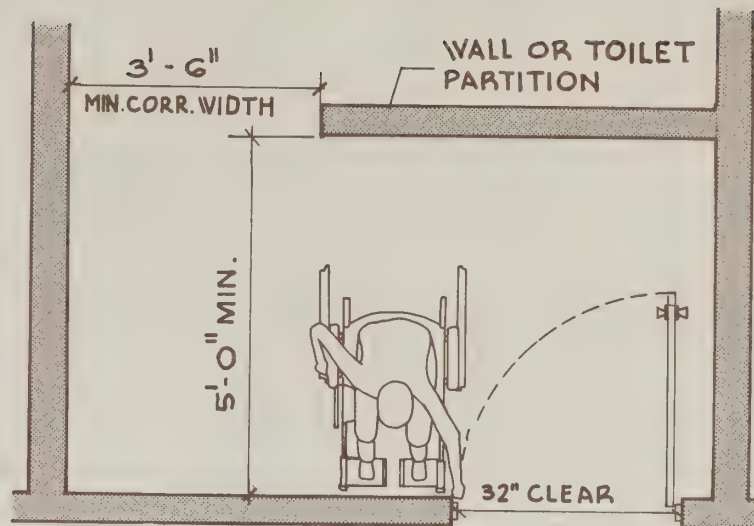




PROBLEM: INSWINGING TOILET ROOM DOOR WITH PRIVACY SCREEN & INSUFFICIENT SPACE FOR CHAIR TO TURN PERPENDICULAR TO WALL BESIDE DOOR REQUIRES LONG LATERAL REACH AND POWER TO OPEN DOOR WHILE MOVING FORWARD & TURNING 90° TO GET THROUGH DOOR.



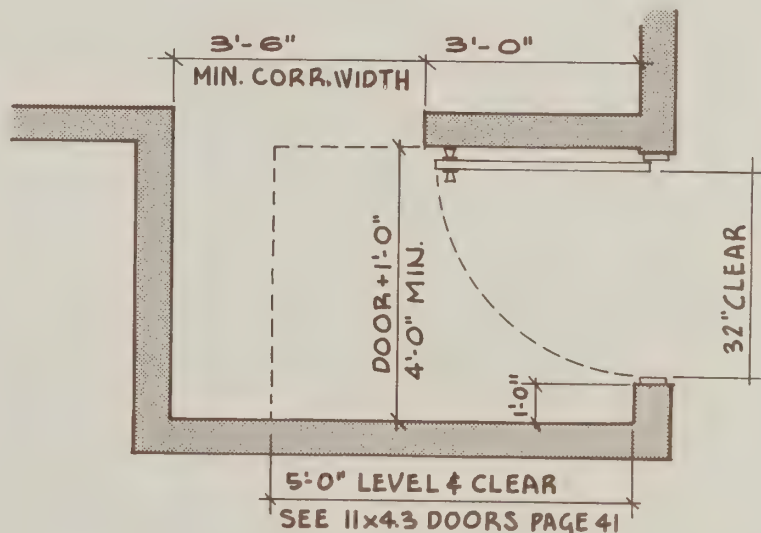
IF SPACE BETWEEN DOOR & SCREEN WALL IS LESS THAN 5'-0", DOOR MUST SWING OUT. WITH OUTSWINGING DOOR, SPACE MUST BE MINIMUM 42".



DOOR MAY SWING IN, IF 5'-0" LEVEL & CLEAR FLOOR SPACE IN ACCORDANCE WITH 11x4.3(c) DOORS IS AVAILABLE.

TOILET ROOM DOORS & THEIR PROBLEMS.

WHERE TOILET ROOM DOORS SWING IN, 5'-0" LEVEL & CLEAR FLOOR SPACE IS REQUIRED BEYOND DOOR. WHERE TOILET ROOM DOORS SWING OUT, THE FLOOR AREA ON THE TOILET ROOM SIDE MAY BE TREATED AS A CORRIDOR, 42" MINIMUM WIDTH. SEE 11x4.3(c) DOORS PAGE 37.



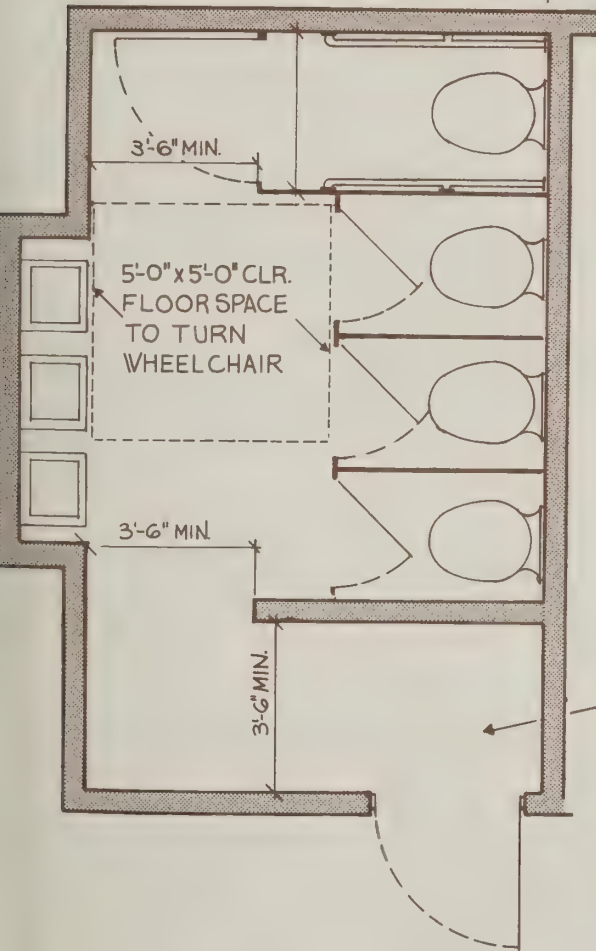
SMALLEST POSSIBLE VESTIBULE WITH INSWINGING DOOR AT PRIVACY SCREEN.

11x4.6 TOILET ROOM PLANS

DUE TO ADDITIONAL LENGTH OF HANDICAPPED TOILET STALLS IT IS SUGGESTED THEY BE LOCATED AT END OF TOILET ROOMS THUS

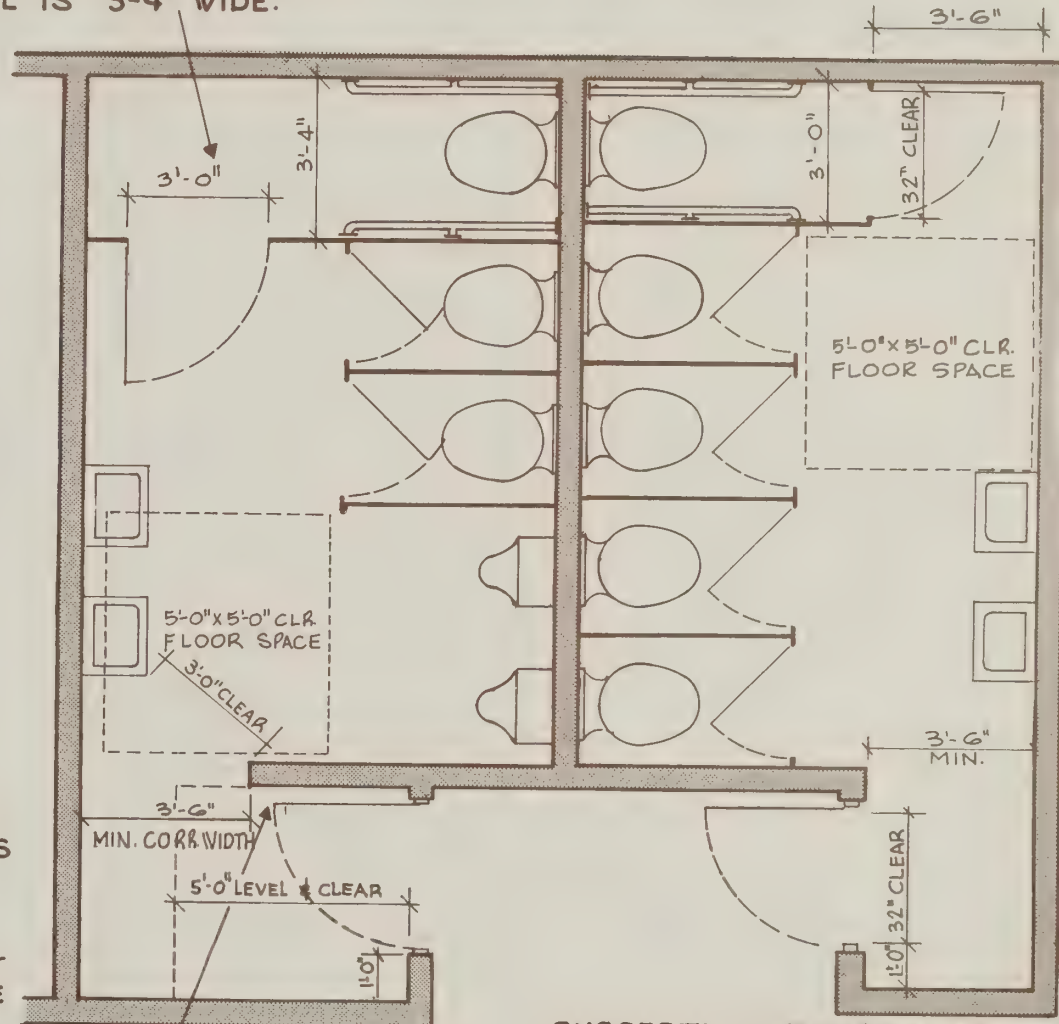
9'-6" WITH FLOOR MOUNTED W.C.

8'-6" WITH WALL MOUNTED W.C.



TOILET ROOM DOOR MUST SWING OUT IF PRIVACY SCREEN IS USED AS SHOWN UNLESS SPACE BETWEEN DOOR & SCREEN IS AT LEAST 5'-0" IN ACCORDANCE WITH 11x4.3

STALLS MAY OCCUPY END OF ROOM & BE ENTERED FROM THE SIDE IF DOOR IS 3'-0" WIDE & STALL IS 3'-4" WIDE.

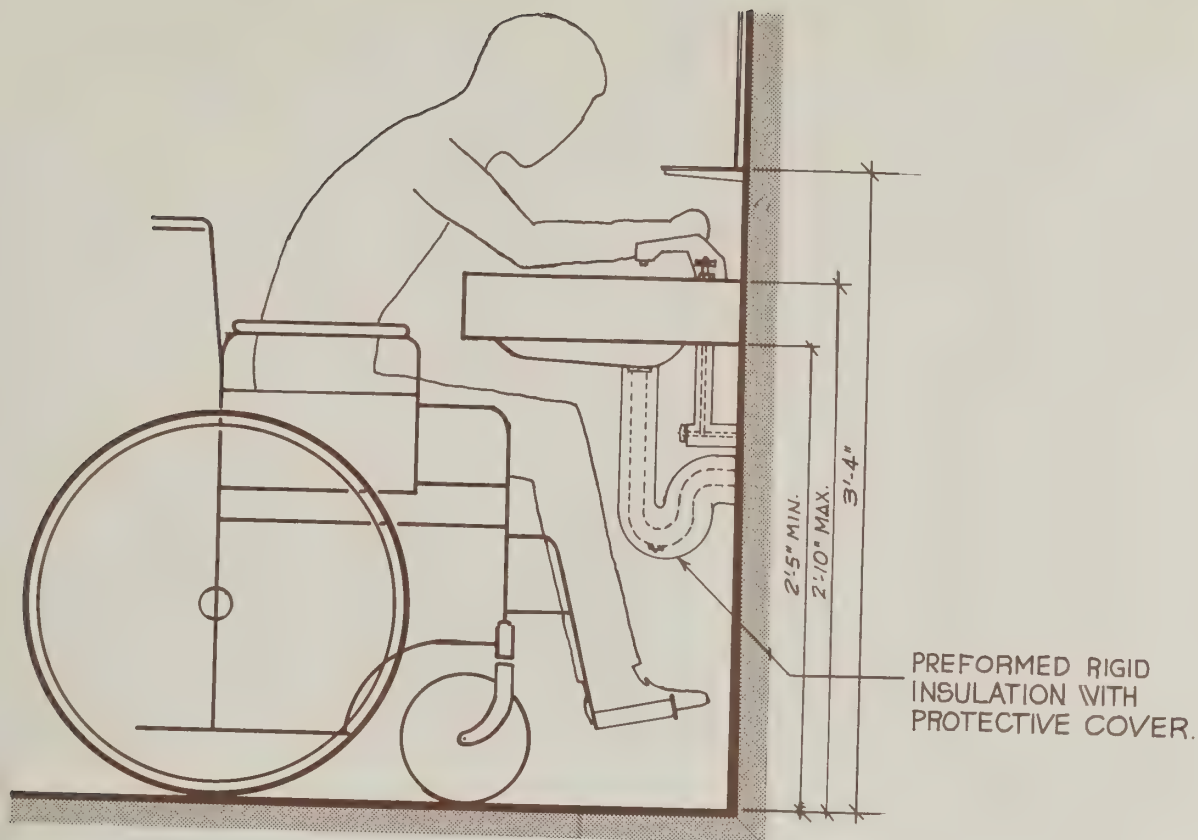


OPEN DOOR MUST NOT OVERLAP 3'-6" MIN. CLEAR CORRIDOR WIDTH.

SUGGESTED ENTRY & PRIVACY SCREEN ARRANGEMENT TO PREVENT DOOR SWINGING OUT INTO THE CORRIDOR. DOORS MAY SWING IN OR OUT.

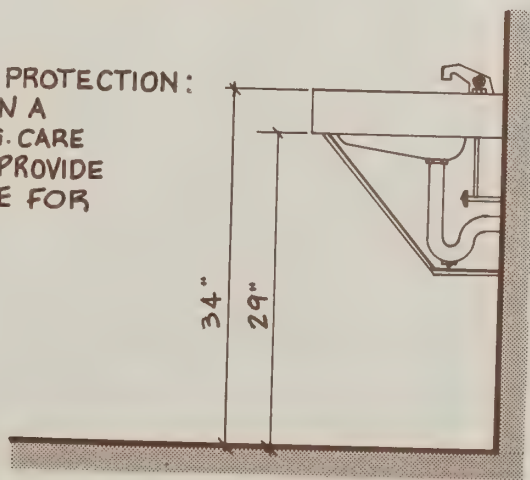
(11x)4.6—toilet rooms

- c) Toilet rooms shall have at least one lavatory which when mounted allows 29 inches clearance to the bottom of the apron, and a maximum rim height of 34 inches above the floor.
- d) Maximum water temperatures to water outlets serving handicapped fixtures shall not exceed 120°F; or exposed hot water lines and drains shall be fully insulated.
- e) When mirrors and shelves are provided, at least one mirror and one shelf shall be placed above lavatories at a height not to exceed 40 inches above the floor, measured from the top of the shelf and the bottom of the mirror.



IF HOT WATER EXCEEDS 120°, SUPPLY AND DRAIN LINES MUST BE INSULATED TO PREVENT BURNING PERSONS WITH NO SENSATION IN THEIR LEGS.

ALTERNATE METHOD OF PROTECTION: ENCLOSE PLUMBING IN A PROTECTIVE HOUSING. CARE SHOULD BE TAKEN TO PROVIDE ADEQUATE CLEARANCE FOR WHEELCHAIRS.



11x4.6(c) TOILET ROOMS SHALL HAVE AT LEAST ONE LAVATORY WHICH WHEN MOUNTED, ALLOWS 29" CLEARANCE FROM THE FLOOR TO THE BOTTOM OF THE APRON AND A MAXIMUM RIM HEIGHT OF 34".

11x4.6(d) MAXIMUM WATER TEMPERATURES TO HANDICAPPED PLUMBING FIXTURES SHALL NOT EXCEED 120°F, OR EXPOSED HOT WATER LINES & DRAINS SHALL BE FULLY INSULATED.

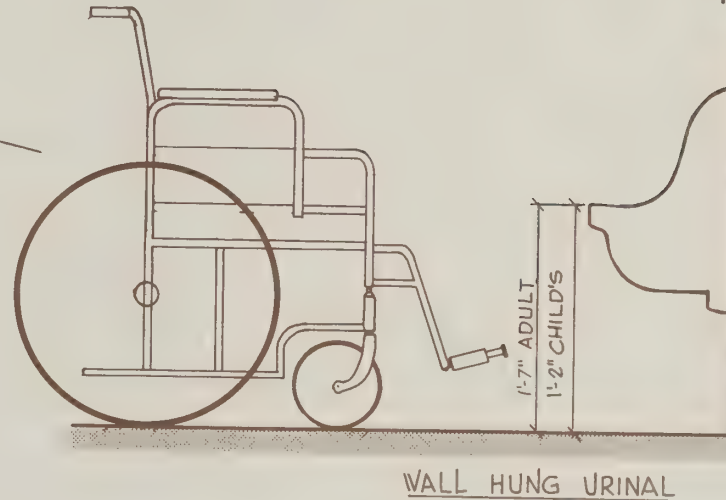
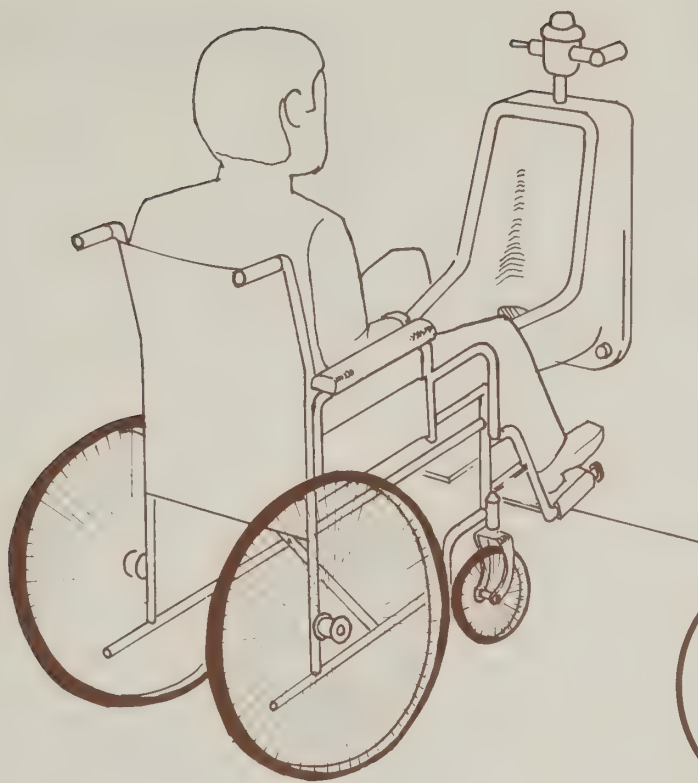
11x4.6(e) WHEN MIRRORS AND SHELVES ARE PROVIDED, AT LEAST ONE MIRROR & ONE SHELF SHALL BE PLACED ABOVE LAVATORIES 40" ABOVE THE FLOOR TO THE BOTTOM OF THE MIRROR AND THE TOP OF THE SHELF.

(11x)4.6—toilet rooms

- f) Toilet rooms for men shall have at least one wall-mounted urinal with elongated lip with the opening of the basin 19 inches from the floor, or shall have floor-mounted urinals that are on a level with the main floor of the toilet room. Urinals for small children such as elementary school students shall meet the requirements for their use.
- g) Where a towel rack, a towel dispenser and other dispensers and disposal units are provided in toilet rooms, at least 1 of each shall not exceed a height of 40 inches from the floor.

11x4.6(f) TOILET ROOMS

TOILET ROOMS FOR MEN SHALL HAVE AT LEAST ONE WALL MOUNTED URINAL WITH ELONGATED LIP, WITH THE BASIN OPENING 19" FROM THE FLOOR, OR SHALL HAVE FLOOR TYPE URINALS.

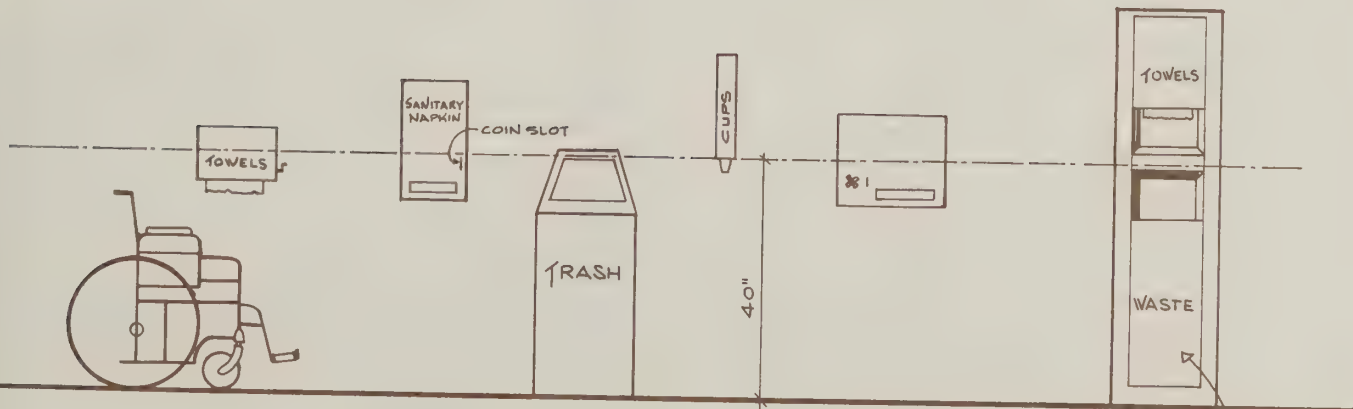


WALL HUNG URINAL



FLOOR TYPE

11x4.6(g) WHERE TOWEL RACKS, DISPENSERS, DISPOSAL UNITS, VENDING MACHINES & APPLIANCES ARE PROVIDED IN TOILET ROOMS, ONE OF EACH TYPE SHALL BE MOUNTED WITH ALL OPERATING MECHANISMS (CRANKS, COIN SLOTS, BUTTONS, ETC.) AND ITEMS THEMSELVES NO MORE THAN 40" ABOVE THE FLOOR.



THIS TYPE NOT ACCEPTABLE UNLESS SEPARATE TOWEL DISPENSER IS ALSO INSTALLED AT 40"

(11x)4.6—toilet rooms

- h) Where showers are provided, 2% or a minimum of one, whichever is greater shall be no less than 3' x 3' inside dimensions and shall not contain curbs except that thresholds for entering and leaving showers meeting the requirements of Section 4.3 (e) may be used.
- i) Shower stalls equipped for handicapped shall have the floor surface which is non-slip. Where stalls are used, a seat shall be positioned 19 inches above the floor and shall be hinged to fold against the wall. A grab rail shall be attached to the stall wall opposite the seat and shall extend around on the back of the wall. The water control shall be lever controlled with flexible hand shower spray, and soap tray shall be placed at a height not to exceed 40 inches above the floor. All control shall be single lever type.
- j) Minimum toe space of 8¾ inches in height and 6 inches in depth shall be provided for cabinets in the toilet room area.

11x4.6SINGLE INDIVIDUAL TOILET ROOMS

11x4.6(h) WHERE SHOWERS ARE PROVIDED, 2% OR A MINIMUM OF ONE SHALL BE NO LESS THAN 3'-0" x 3'-0" INSIDE & SHALL NOT HAVE CURBS BUT MAY HAVE THRESHOLDS IF THEY MEET THE REQUIREMENTS OF 11x4.3(e)

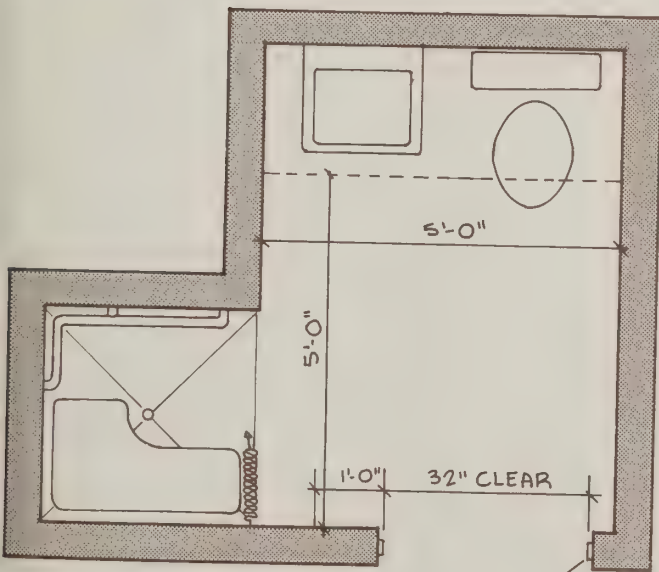
11x4.6(i) SHOWERS FOR THE HANDICAPPED SHALL HAVE:

- 1.) NON-SLIP FLOOR.
- 2.) SEAT 19" ABOVE FLOOR HINGED TO SWING UP OUT OF THE WAY OF STANDING PERSONS.
- 3.) GRAB RAIL OPPOSITE SEAT AND AROUND BACK WALL.
- 4.) SINGLE LEVER WATER CONTROLS.
- 5.) FLEXIBLE HOSE WITH HAND HELD SHOWER HEAD.
- 6.) SOAP TRAY NO MORE THAN 40" ABOVE FLOOR.

11x4.6(j) CABINETS SHALL HAVE MINIMUM TOE SPACE 6" IN DEPTH & 8 3/4" IN HEIGHT.

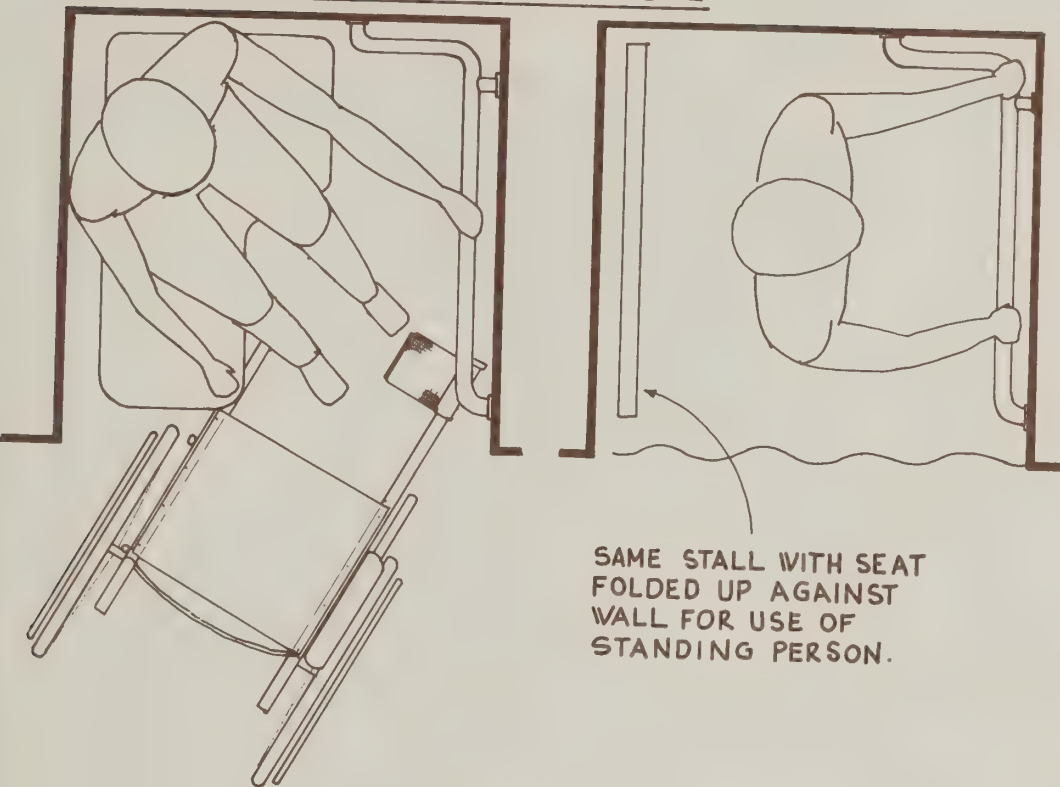
SEE SECTION 11x4.6(h,i,&j)
PAGE 69 FOR RECOMMENDED
HANDICAPPED SHOWER
DETAILS & ALTERNATIVE
"ROLL-IN" DESIGN PAGE 71

SINGLE TOILET ROOM WITH SHOWER



SMALLEST POSSIBLE TOILET ROOM WITH SHOWER

SHOWER STALL USE

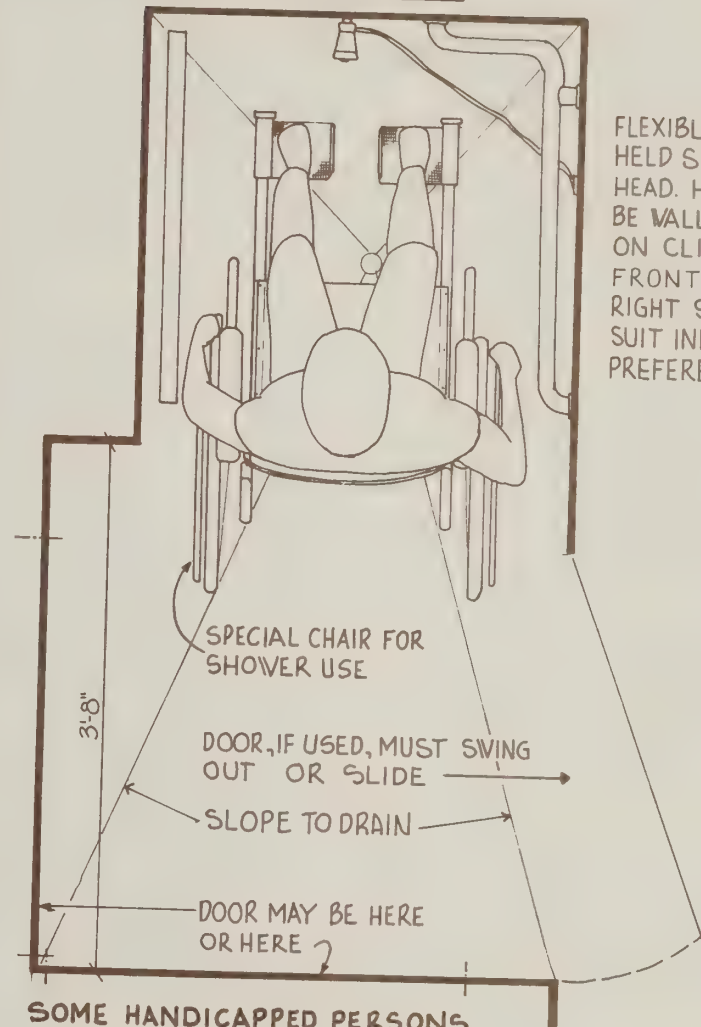


SAME STALL WITH SEAT FOLDED UP AGAINST WALL FOR USE OF STANDING PERSON.

IN BASIC MINIMAL REQUIRED SHOWER STALL, USER MUST MAKE TRANSFER FROM CHAIR TO SHOWER SEAT. DISABLED PERSON CAN SIT IN CORNER USING WALLS FOR LATERAL SUPPORT & STILL REACH CONTROLS ON OPPOSITE WALL.

SOME PERSONS CAN ONLY MAKE TRANSFER ON ONE SIDE, SO IT IS RECOMMENDED THAT ONE STALL EACH BE INSTALLED FOR LEFT AND RIGHT TRANSFERS.

ROLL-IN SHOWER

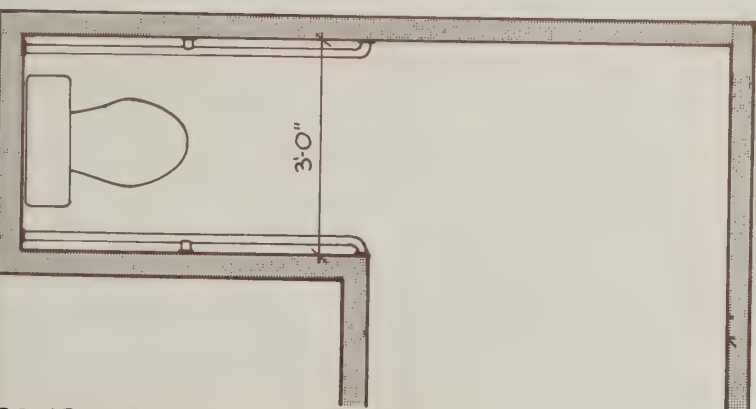
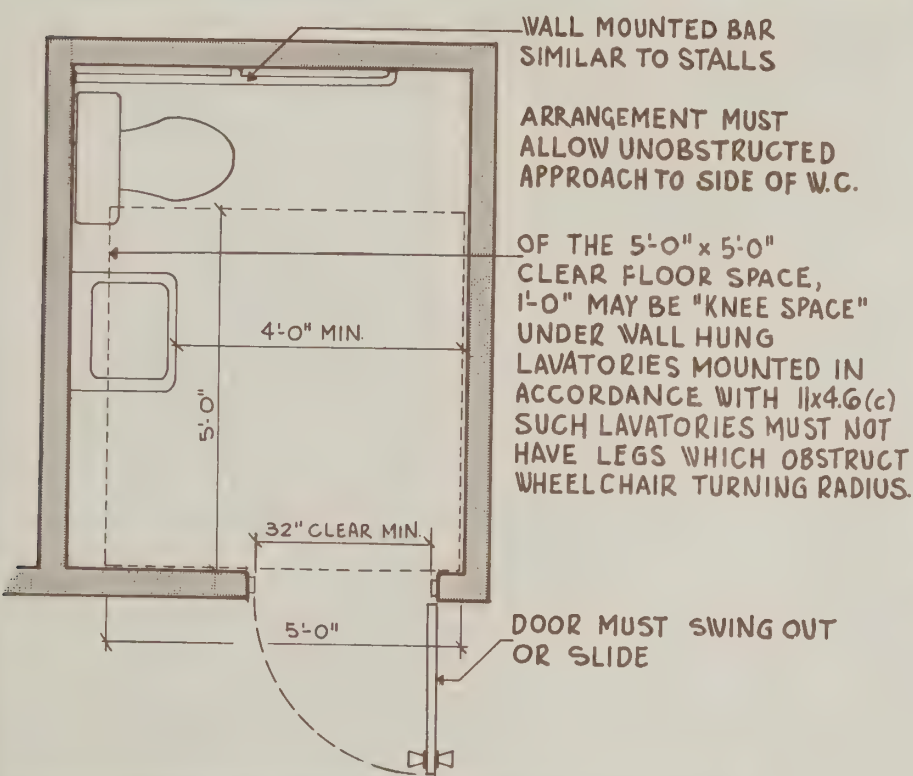


FLEXIBLE HAND HELD SHOWER HEAD. HOSE CAN BE WALL MOUNTED ON CLIPS AT FRONT, LEFT, OR RIGHT SIDES TO SUIT INDIVIDUAL PREFERENCE.

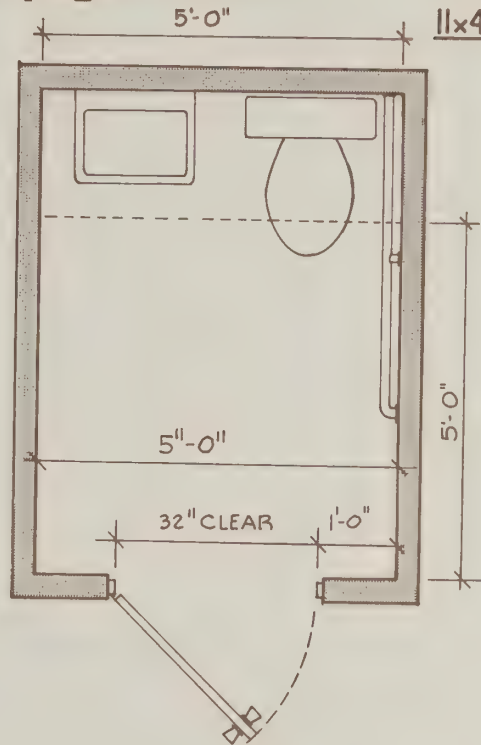
SOME HANDICAPPED PERSONS CANNOT MAKE TRANSFERS TO SEAT. MANY INDIVIDUALS PREFER "ROLL-IN" SHOWERS IN WHICH USER SHOWERS IN A WHEELCHAIR. (A SPECIAL CHAIR IS REQUIRED THAT WILL NOT BE DAMAGED BY SOAP & WATER.) THE ABOVE ADDITIONAL FLOOR SPACE TO THE REQUIRED SHOWER STALL WILL ACCOMMODATE TRANSFERS, STANDING, AND ROLL-IN USERS AND IS THEREFORE MUCH PREFERRED *



minimum requirements for single individual toilet rooms include 11x4.6(a),(b)3,4,5 , (c),(d),(e),(g),(h),(i),&(j) for complete text see pages 55-59



COMPARTMENTED TOILET ROOM
SIMILAR TO STALL REQUIRES
BOTH HANDRAILS SINCE THERE
IS NOT ENOUGH ROOM FOR SIDE
APPROACH.



SMALLEST POSSIBLE TOILET
ROOM WITH 5'-0" x 5'-0" CLEAR
FLOOR SPACE. PART OF CLEAR
FLOOR SPACE MAY BE UNDER
TOILET IF TOILET HAS A
DEEPLY RECESSED BASE TO
PROVIDE CLEARANCE AS
INDICATED ON PAGE 59.

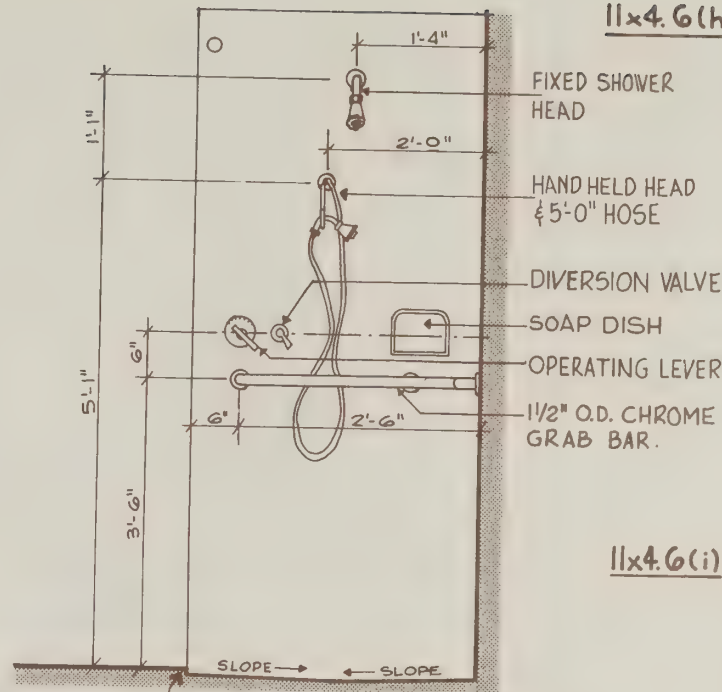
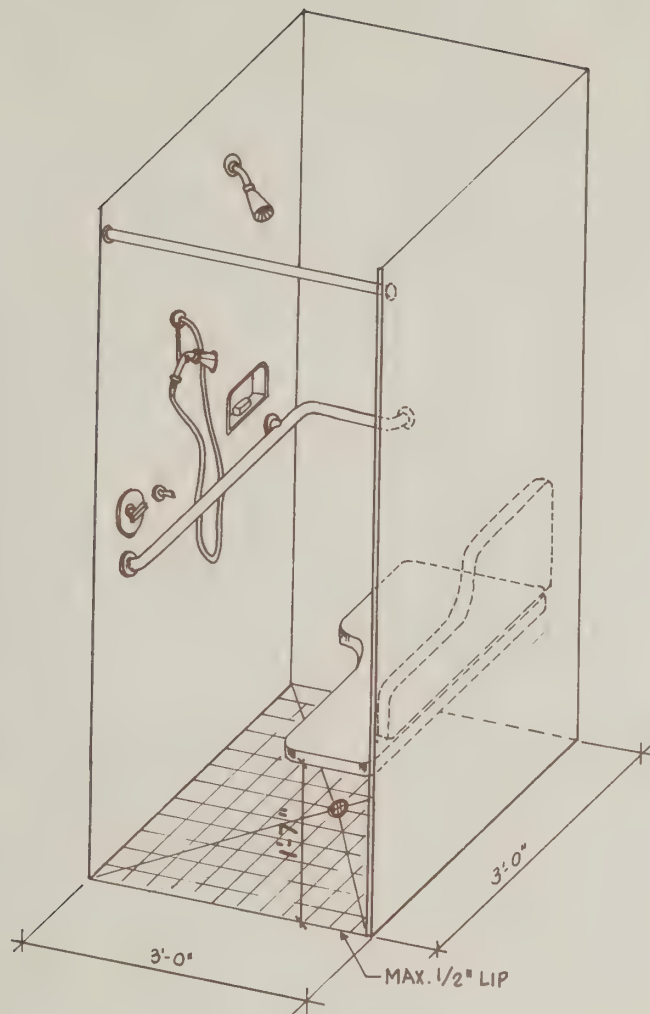
- (b) 3. DOORS TO TOILET
ROOMS MUST HAVE 32"
CLEAR OPENINGS.
- 4. TOILET SEAT MUST BE
20" ABOVE THE FLOOR.
- 5. IN INDIVIDUAL TOILET
ROOMS, AT LEAST ONE
CHROME OR STAINLESS
STEEL HANDRAIL 54"
LONG, 1 1/2" DIAMETER
MUST BE WALL MOUNTED
33" ABOVE THE FLOOR.

(c) LAVATORIES MUST BE MOUNTED
WITH BOTTOM OF APRON 29"
MINIMUM ABOVE FLOOR AND
RIM 34" MAXIMUM ABOVE
FLOOR.

(d) MAXIMUM WATER TEMPERATURE
MUST NOT EXCEED 120°, OR
EXPOSED HOT WATER LINES
& DRAINS MUST BE FULLY
INSULATED.

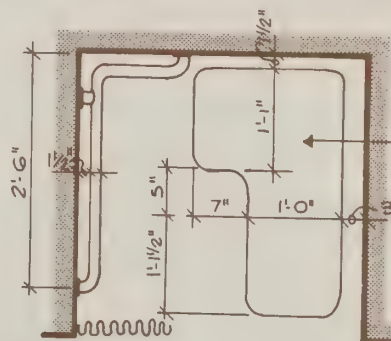
(e) MIRRORS & SHELVES SHALL
NOT BE MORE THAN 40"
ABOVE THE FLOOR.

(g) TOWEL RACKS & DISPENSERS
SHALL NOT BE MORE
THAN 40" ABOVE FLOOR.



1/2" VERTICAL EDGE IN ACCORDANCE WITH THRESHOLD REQUIREMENTS IS DESIRABLE BECAUSE WHEELCHAIR USERS CAN ROLL SMALL FRONT WHEELS OVER EDGE AND PREVENT CHAIR SLIDING BACKWARDS ON WET FLOORS DURING TRANSFER FROM WHEELCHAIR TO SEAT.

ELEVATION OF PLUMBING WALL



PLAN

11x4.6(h) WHERE SHOWERS ARE PROVIDED, 2% OR A MINIMUM OF ONE WHICHEVER IS GREATER SHALL BE NO LESS THAN 3'x3' INSIDE & SHALL NOT HAVE CURBS, BUT MAY HAVE THRESHOLDS IF THEY MEET THE REQUIREMENTS OF 11x4.3(e)

11x4.6(i) SHOWER STALLS EQUIPPED FOR THE HANDICAPPED SHALL HAVE THE FOLLOWING:

1. NON SLIP FLOOR SURFACE (CARBORUNDUM OR GRIT FACED TILE RECOMMENDED).
2. SEAT 19" ABOVE FLOOR HINGED TO SWING UP OUT OF THE WAY OF STANDING PERSONS.
3. GRAB RAIL OPPOSITE SEAT & AROUND BACK WALL.
4. SINGLE LEVER WATER CONTROLS.
5. FLEXIBLE HOSE WITH HAND HELD SHOWER HEAD.
6. SOAP TRAY NO MORE THAN 40" ABOVE FLOOR.

SEAT WITH RECOMMENDED 2" HORSE HAIR CUSHION & NAUGAHYDE COVER.

11x4.6(j) CABINETS IN TOILET AREAS SHALL HAVE TOE SPACES MIN. 6" DEEP & 8 3/4" HIGH. SEE 11x4.6(a) CLEAR FLOOR SPACE PAGE 55.

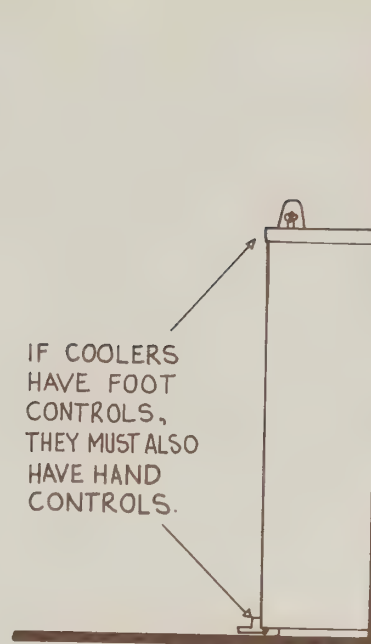
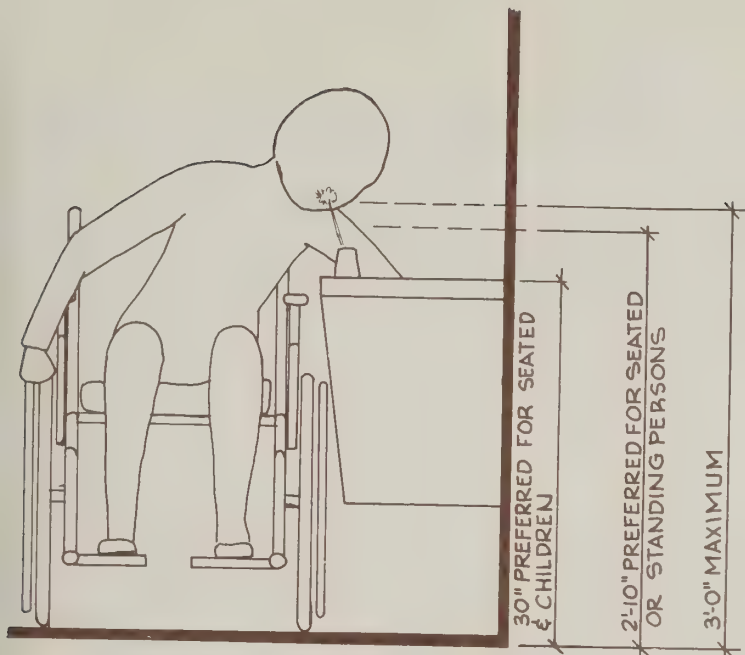
(11x)4.7—water fountains

Buildings where Section (11X)1.1 applies and where water fountains are provided, such water fountains shall comply with the following requirements:

- a) Water fountains or coolers shall have upfront spouts and controls.
- b) Water fountains or coolers shall be hand-operated or hand- and foot-operated.
- c) Where provided, at least one per floor conventional wall or floor-mounted water cooler shall have a small fountain mounted on the side of the cooler, with the edge of the small fountain basin no higher than 30 inches above the floor. Wall-mounted, hand-operated coolers serve the able-bodied and the physically disabled when the cooler is mounted with the edge of the basin 36 inches from the floor.

(11x)4.8—telephones

See appendix B for recommendations.



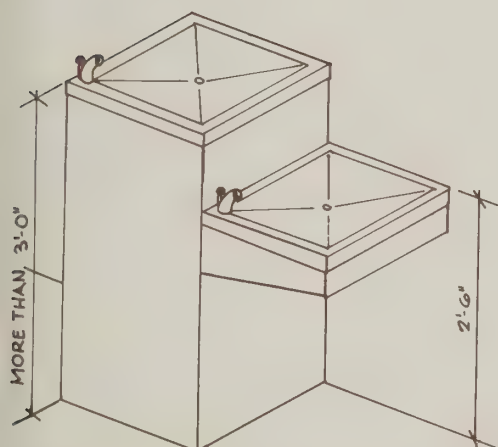
11x4.7 water fountains

WHEREVER WATER FOUNTAINS ARE PLANNED, AT LEAST ONE PER FLOOR SHALL MEET WITH THE FOLLOWING REQUIREMENTS.

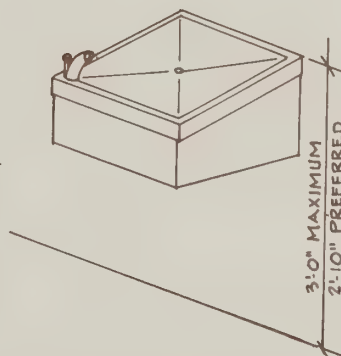
11x4.7(a) WATER FOUNTAINS & COOLERS SHALL HAVE UPFRONT SPOUTS & CONTROLS.

11x4.7(b) FOUNTAINS & COOLERS SHALL BE HAND OPERATED OR HAND & FOOT OPERATED.

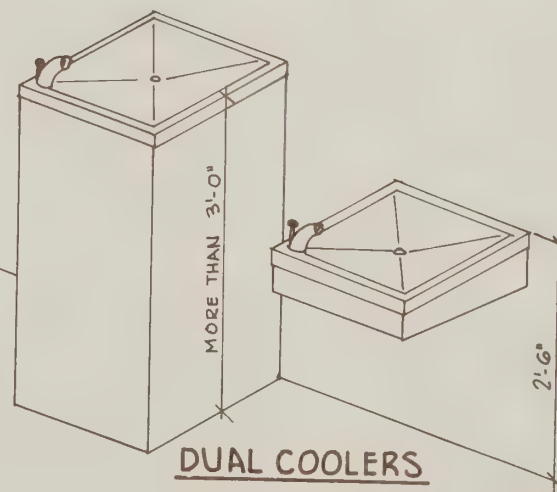
11x4.7(c) WHERE A SINGLE CONVENTIONAL COOLER IS USED, IT MUST BE NO MORE THAN 36" ABOVE THE FLOOR, 34" IS PREFERRED*



FLOOR MODEL WITH AUXILIARY SIDE UNIT

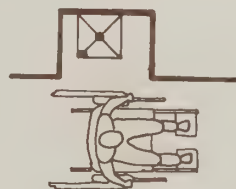


SINGLE COOLER



DUAL COOLERS

WATER COOLERS HIGHER THAN 36" MUST HAVE AN ADDITIONAL SMALL FOUNTAIN MOUNTED ON THE SIDE OF THE COOLER WITH THE RIM OF THE SMALL FOUNTAIN BASIN NO HIGHER THAN 30" ABOVE THE FLOOR, OR HAVE AN ADDITIONAL SEPARATE COOLER WITH ITS RIM 30" ABOVE THE FLOOR.



11x4.8 telephones

SEE APPENDIX B FOR RECOMMENDATIONS



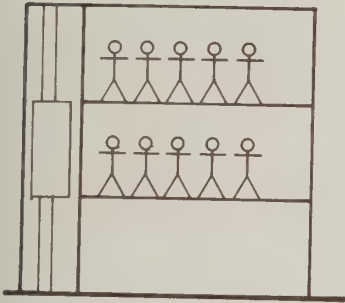
(11x)4.9—elevators

- a) Unless ramps meeting the requirements of (11x)4.1 are provided to serve each floor level at least one elevator shall be provided as follows:
 - 1) All buildings over 2 stories in height with occupancy of 100 or more persons above or below the main entrance floor other than as specified below.
 - 2) All administrative buildings of County, Municipal and State Government over 1 story.
 - 3) All publically-owned school buildings and other privately-owned buildings of similar occupancy (such as full-time, privately-owned schools, colleges, and universities) over one story and all non-publically owned school buildings over three stories with over 200 persons above or below the main entrance floor level. Basements with over 100 persons are counted as a story for the purpose of this section.
 - 4) All buildings over three stories regardless of the number of persons or occupancy classification with the exception of privately-owned schools or institutional buildings.
 - 5) All privately-owned residential buildings shall have elevators in buildings over three stories.

11x4.9 elevators

11x4.9(a) 1-5

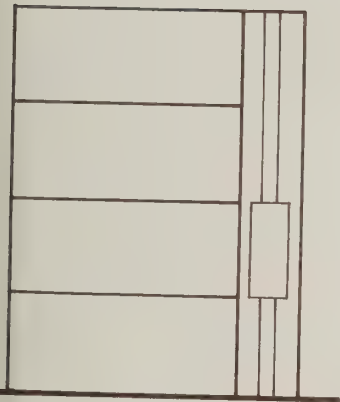
RAMPS OR ELEVATORS ARE REQUIRED TO CONNECT ALL FLOORS IN:



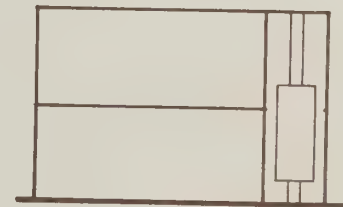
ALL BUILDINGS OVER 2
STORIES WITH 100
PEOPLE ABOVE OR BELOW
THE MAIN LEVEL.



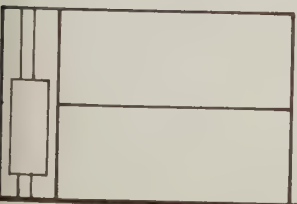
ALL PUBLIC SCHOOL
BUILDINGS OVER 1
STORY.



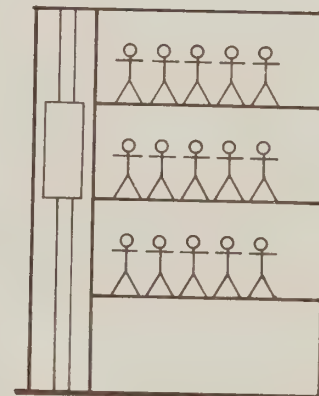
ALL BUILDINGS OVER
3 STORIES.



ALL FULL-TIME,
PRIVATELY-OWNED
SCHOOLS, COLLEGES, &
UNIVERSITIES OVER 1
STORY.



ALL COUNTY, MUNICIPAL,
& STATE GOVERNMENT
ADMINISTRATIVE BUILDINGS
OVER 1 STORY.

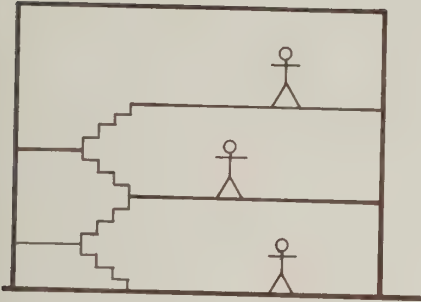


ALL OTHER PRIVATE SCHOOLS
OR PRIVATE INSTITUTIONS
OVER 3 STORIES WITH
200 PEOPLE ABOVE OR
BELOW THE MAIN LEVEL.

(11x)4.9—elevators

- b) Elevators shall be accessible to, and usable by, the physically disabled at all levels normally used by the general public.
- c) In no case shall interior cab dimensions of elevators normally used by the public for buildings over three stories in height, be less than 5 feet x 5 feet square, or 63 inches x 56 inches rectangular, or 80 inches x 51 inches rectangular (a standard industrial size elevator). In buildings three stories and less in height the elevator may be 72" x 44" minimum 2000 lb. capacity. The bottom of control panels shall be no higher than 4 feet from the floor and should have tactile identification beside the buttons.

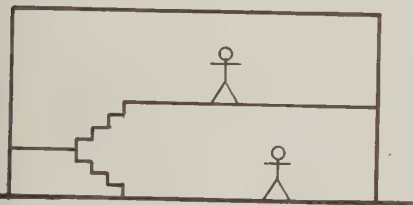
BUILDINGS NOT REQUIRING ELEVATORS



PRIVATELY-OWNED NON-FULL TIME SCHOOL BUILDINGS 3 STORIES OR LESS WITH FEWER THAN 200 PEOPLE ABOVE OR BELOW THE MAIN LEVEL.

PRIVATE INSTITUTIONS 3 STORIES OR LESS WITH FEWER THAN 200 PEOPLE ABOVE OR BELOW THE MAIN LEVEL.

PRIVATE RESIDENTIAL BUILDINGS 3 STORIES OR LESS.

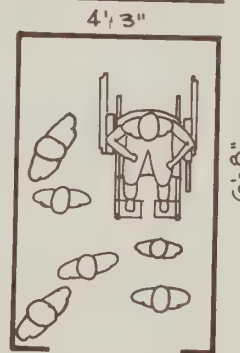
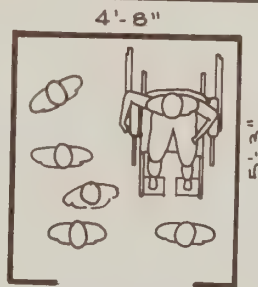
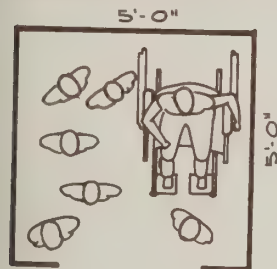


2 STORY BUILDINGS WITH FEWER THAN 100 PEOPLE ABOVE OR BELOW THE MAIN LEVEL.

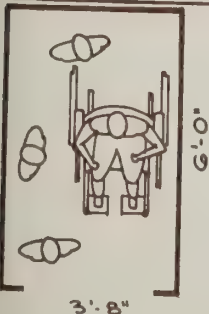
11x4.9(b) ALL ELEVATORS, LOBBIES, & APPROACHES NORMALLY USED BY THE GENERAL PUBLIC SHALL BE ACCESSIBLE TO AND USABLE BY THE HANDICAPPED.

11x4.9(c) CAB DIMENSIONS

MINIMUM CAB DIMENSIONS FOR BUILDINGS OVER 3 STORIES

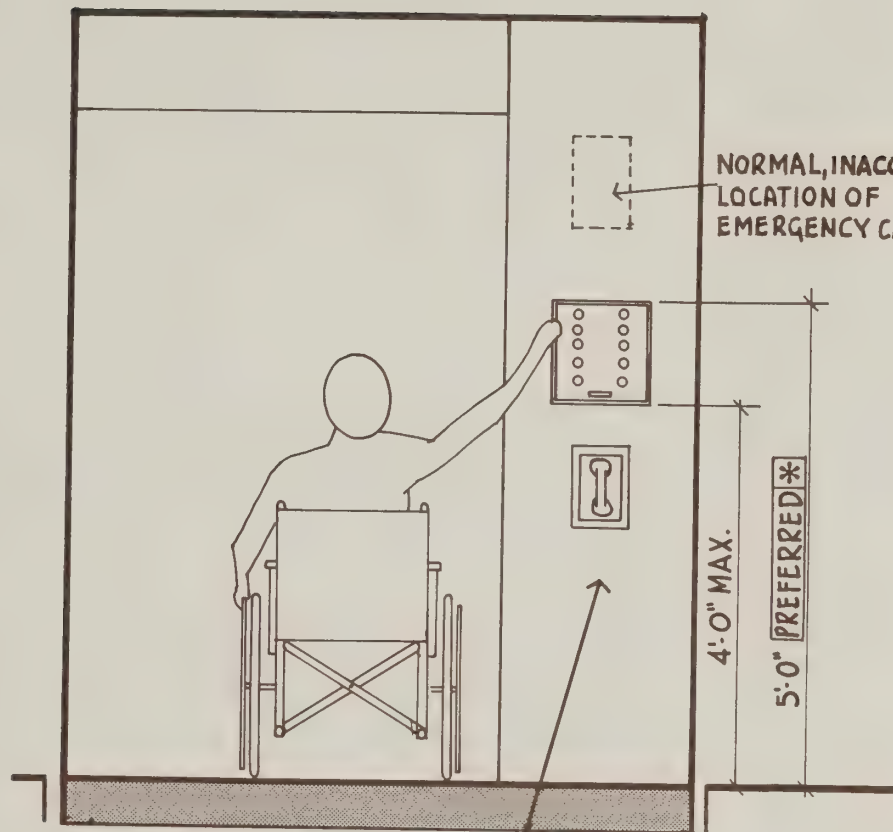


MINIMUM CAB DIMENSIONS FOR BUILDINGS UNDER 3 STORIES



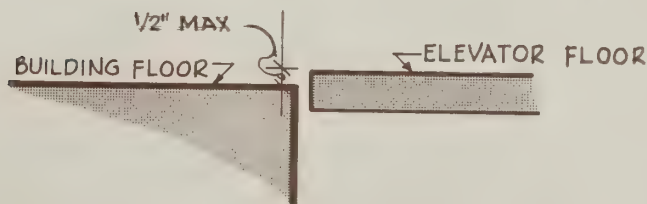
(11x)4.9—elevators

- d) All elevators shall be so adjusted/controlled that the floor of the elevators when stopped, will conform to building floor levels with a $\frac{1}{2}$ inch tolerance.



ELEVATOR CONTROLS

EMERGENCY CALL BOX & CONTROLS ARE **PREFERRED*** TO BE LOCATED LESS THAN 4'-0" HIGH TO BE WITHIN REACH OF SEATED PERSON. AUDIBLE, PREFERABLY VERBAL SIGNALS ARE **PREFERRED*** TO IDENTIFY EACH FLOOR LEVEL SERVED TO FACILITATE USE BY THE BLIND



11x4.9(c) (CONT'D) BOTTOM OF CONTROL PANELS MUST BE NO HIGHER THAN 4'-0". TOP OF CONTROL PANEL SHOULD BE NO HIGHER THAN 5'-0" AS AVERAGE UNILATERAL REACH FROM WHEELCHAIR IS 60"

ALL BUTTONS SHOULD HAVE TACTILE IDENTIFICATION BESIDE THEM.

ELEVATOR CALL BUTTONS IN LOBBIES SHALL BE MOUNTED NO HIGHER THAN 4'-0" ABOVE THE FLOOR. SEE 11x4.10 CONTROLS.

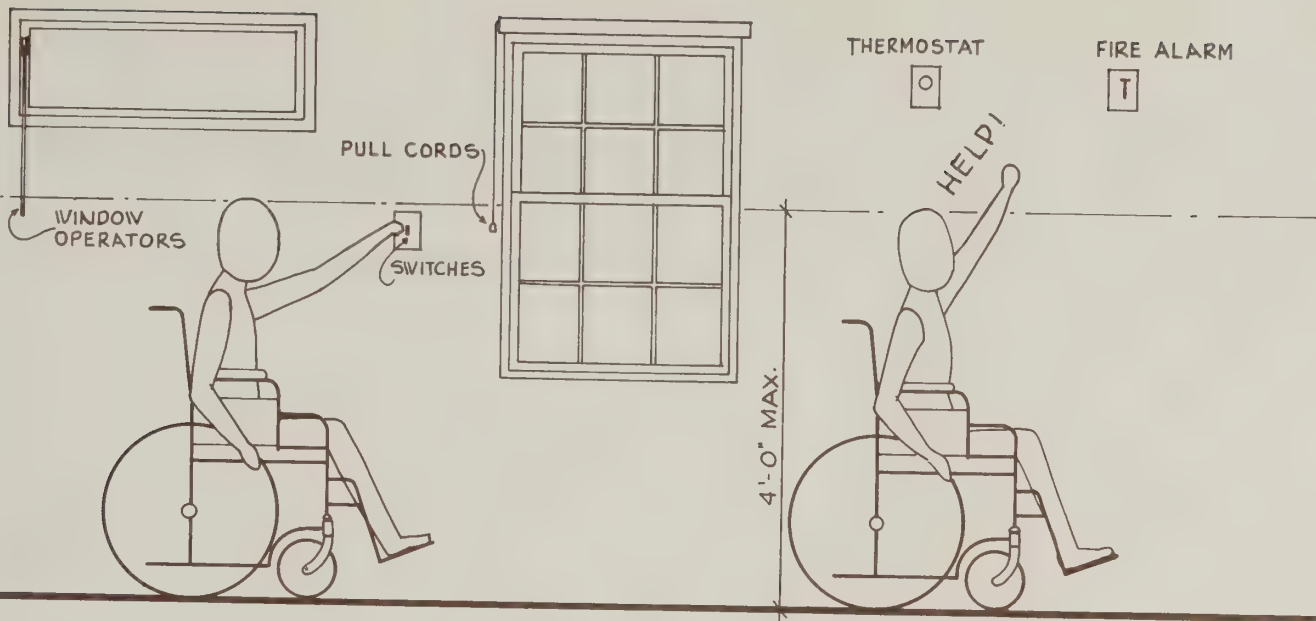
11x4.9(d) ELEVATOR FLOOR LEVELS MUST STOP WITHIN 1/2" MAXIMUM OF BUILDING FLOOR LEVELS.

(11x)4.10—controls

Switches and controls which are designed to be operable by the occupant for the control of light, ventilation, windows, draperies, doors in all places designed to be occupied by the handicapped and all similar controls where intended to be operable by occupant of frequent or essential use, shall be placed no higher than 4 feet from the floor. This does not apply to fire alarm and thermostatic controls.

(11x)4.11—identification

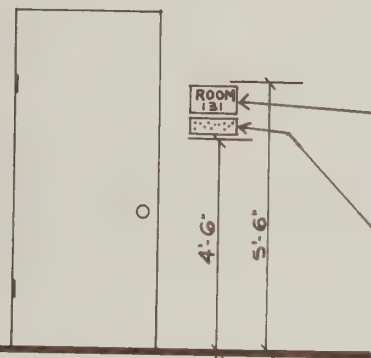
- a) Spaces that would normally be utilized by the visually handicapped (i.e., reception, toilet rooms) shall be identified by a plaque with raised or notched letters and/or numbers. This plaque shall be next to an entrance doorway at a height between 4 feet 6 inches and 5 feet 6 inches, measured from the floor, and shall be on the side nearest the door handle when the door is closed.
- b) Doors to stairs, loading platforms, boiler rooms, stages and fire escapes shall have knurled door handles or knobs.



11x4.10 controls

ALL CONTROL DEVICES FOR LIGHT, POWER, HEAT, VENTILATION, WINDOWS, DRAPERIES, DOOR, & SIMILAR CONTROLS SHALL BE MOUNTED NO HIGHER THAN 4'-0" FROM THE FLOOR.

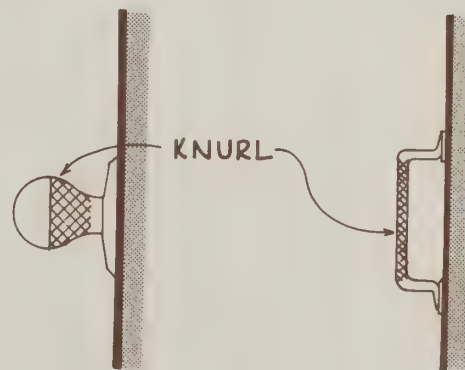
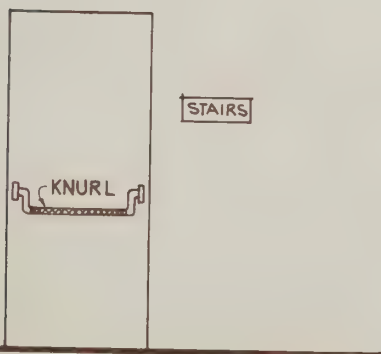
PREFERRED * FIRE ALARMS & THERMOSTATS ARE ESSENTIAL TO THE HEALTH & SAFETY OF ALL PEOPLE. THEY ALSO SHOULD BE MOUNTED NO MORE THAN 4'-0" FROM THE FLOOR.



VISUAL & TACTILE LABELS WITH RAISED OR RECESSED LETTERS & NUMERALS, SHALL BE USED TO IDENTIFY ROOM & OFFICES. BLIND PERSONS CAN READ TACTILE NON-BRAILLE LETTERS & NUMBERS, HOWEVER BRAILLE LETTERS & NUMERALS ARE AVAILABLE IF DESIRED. THEY SHOULD ONLY BE USED IN ADDITION TO VISUAL & TACTILE LETTERS

11x4.11 identification

11x4.11(a) SPACES USED BY VISUALLY HANDICAPPED SHALL BE IDENTIFIED BY A PLAQUE WITH RAISED OR RECESSED LETTERS & NUMERALS. PLAQUES SHALL BE MOUNTED BETWEEN 4'-6" & 5'-6" ON THE WALL NEXT TO THE DOOR ON THE SIDE NEAREST THE DOOR HANDLE OR KNOB.



11x4.11(b) DOORS TO STAIRS, LOADING PLATFORMS, BOILER ROOMS, STAGES, & FIRE ESCAPES SHALL HAVE KNURLED DOOR HANDLES OR KNOBS.

(11x)5 minimum requirements for residential and institutional occupancies

For the purpose of this Section, a residential project shall be defined as 1 residential building, or a group of related residential buildings (such as those shown on a plat filed with a municipal or county planning department showing the relative location of buildings).

In no instance, shall units designated to be accessible to the handicapped be segregated from other units within the project by design (e.g. setting aside all residential units for the handicapped in 1 residential building in a large project instead of equally distributing the units designed for the handicapped throughout the project).

(11x)5.1—minimum requirements for privately-owned residential occupancies including condominiums (see recommendations in appendix C)

(11x)5.2—minimum requirements for the construction of publically-owned residential projects and privately-owned hotels, motels, residential school and institutional projects

In addition to other requirements set forth in other sections of the Handicapped Section of the North Carolina State Building Code, the following standards are minimum requirements:

- a) Where 1 or more toilet rooms are provided in an individual residential unit or suite of residential units of publically-owned projects or privately-owned hotels, motels, school and institutional residential projects, a minimum of 5% or a minimum of 1, whichever is greater, toilet room shall comply with (11x) 4.6 (a), (b) 3, 4, 5, (d), (e), (g), and (j), and have walls capable of supporting handrails which can support a 250 pound load.

(11x)5 minimum requirements for residential and institutional occupancies

FOR THE PURPOSES OF THIS SECTION A RESIDENTIAL PROJECT SHALL BE DEFINED AS ONE RESIDENTIAL BUILDING OR A GROUP OF RELATED RESIDENTIAL BUILDINGS.

IN NO INSTANCE SHALL UNITS DESIGNED TO BE ACCESSIBLE TO THE HANDICAPPED BE SEGREGATED FROM OTHER UNITS WITHIN THE PROJECT. UNITS FOR THE HANDICAPPED SHALL NOT BE SET ASIDE IN ONE BUILDING, BUT SHALL BE DISTRIBUTED EQUALLY THROUGHOUT THE RESIDENTIAL PROJECT.

**11x5.1 minimum requirements
for privately-owned
residential occupancies
including condominiums
see recommendations in
appendix C**

**11x5.2 minimum requirements
for the construction of
publicly-owned residential
projects and privately-
owned hotels, motels,
residential school, and
institutional projects**

11x5.2(a) 5%, OR A MINIMUM OF 1,
OF THE TOTAL NUMBER
OF TOILET ROOMS
PROVIDED FOR IN THE
ABOVE BUILDING TYPES
MUST COMPLY WITH THE
FOLLOWING REQUIREMENTS
FROM SECTION 11x4.6:
(SEE PAGES 54-59 FOR
COMPLETE TEXT.)

11x4.6(a) 5'-0" x 5'-0" CLEAR
FLOOR SPACE MAY
HAVE 10R 2'-6" x 8 3/4"
TOE SPACES.

11x5.2(a) CONTINUED

11x4.6(b) 3. DOOR SHALL HAVE A 32" CLEAR OPENING, SWING OUT OR SLIDE, & BE OPERABLE BY A SINGLE EFFORT.

5. STAINLESS STEEL OR CHROME HANDRAILS, 1½" IN DIAMETER, 33" FROM FLOOR SHALL BE INSTALLED ON EACH WALL ADJACENT TO A TOILET. SINCE THE HANDRAILS ARE REQUIRED ON EACH SIDEWALL, IF TOILET IS ADJACENT TO ONLY ONE WALL, ONLY ONE HANDRAIL IS REQUIRED.

11x4.6(d) MAXIMUM WATER TEMPERATURE SHALL NOT EXCEED 120° OR EXPOSED HOT WATER LINES & DRAINS MUST BE FULLY INSULATED.

11x4.6(e) MIRRORS & SHELVES SHALL NOT BE MORE THAN 40" ABOVE THE FLOOR.

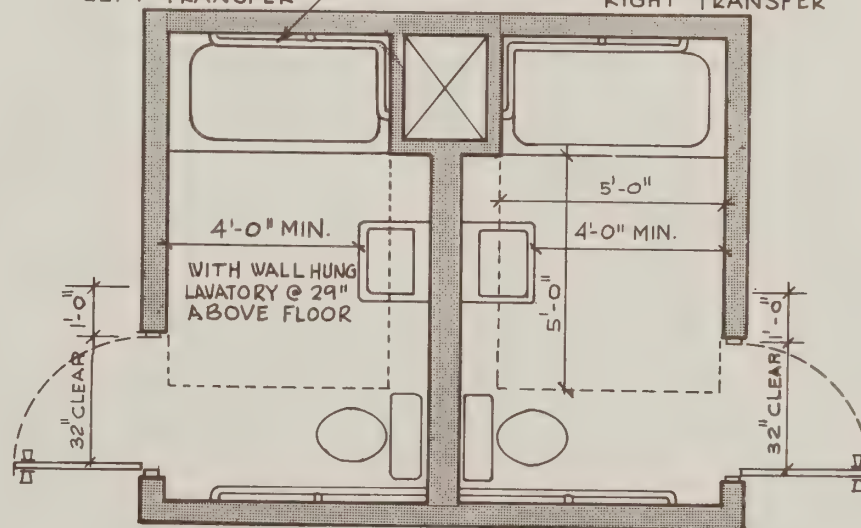
11x4.6(g) TOWEL RACKS & DISPENSERS SHALL NOT BE MORE THAN 40" ABOVE THE FLOOR.

11x4.6(j) CABINETS SHALL HAVE MINIMUM TOE SPACE 6" IN DEPTH & 8¾" IN HEIGHT.

PREFERRED ✕ STAINLESS STEEL OR CHROME HANDRAIL, 1½" IN DIAMETER, SHOULD BE MOUNTED 2'-0" ABOVE BOTTOM OF TUB & ALONG ONE SIDE & ONE END OF TUB. SLIDING GLASS SHOWER DOORS ON TUB SHOULD BE AVOIDED.

LEFT TRANSFER

RIGHT TRANSFER



ABOVE ARRANGEMENT OF WATER CLOSET & LAVATORY ALLOWS WALL MOUNTED HANDRAIL FOR TOILET, & WATER CLOSET DOES NOT BLOCK ACCESS TO TUB.

WATER CLOSET MAY EXTEND OVER 5'-0" x 5'-0" CLEAR FLOOR SPACE IF IT HAS DEEPLY RECESSED BASE TO PROVIDE CLEARANCE AS INDICATED ON PAGE 59 (SEE TOILET FIXTURE SELECTION)

(11x)5.2

- b) Where kitchens are provided in individual residential units or suites of residential units of publicly-owned residential projects or privately-owned school or institutional residential projects, those kitchens shall comply with Appendix C, Subparagraph (b)2, 8, 13 and 14.

11x5.2(b) WHERE KITCHENS ARE PROVIDED IN THE BUILDINGS TO WHICH THIS SECTION APPLIES, THEY SHALL COMPLY WITH THE FOLLOWING:

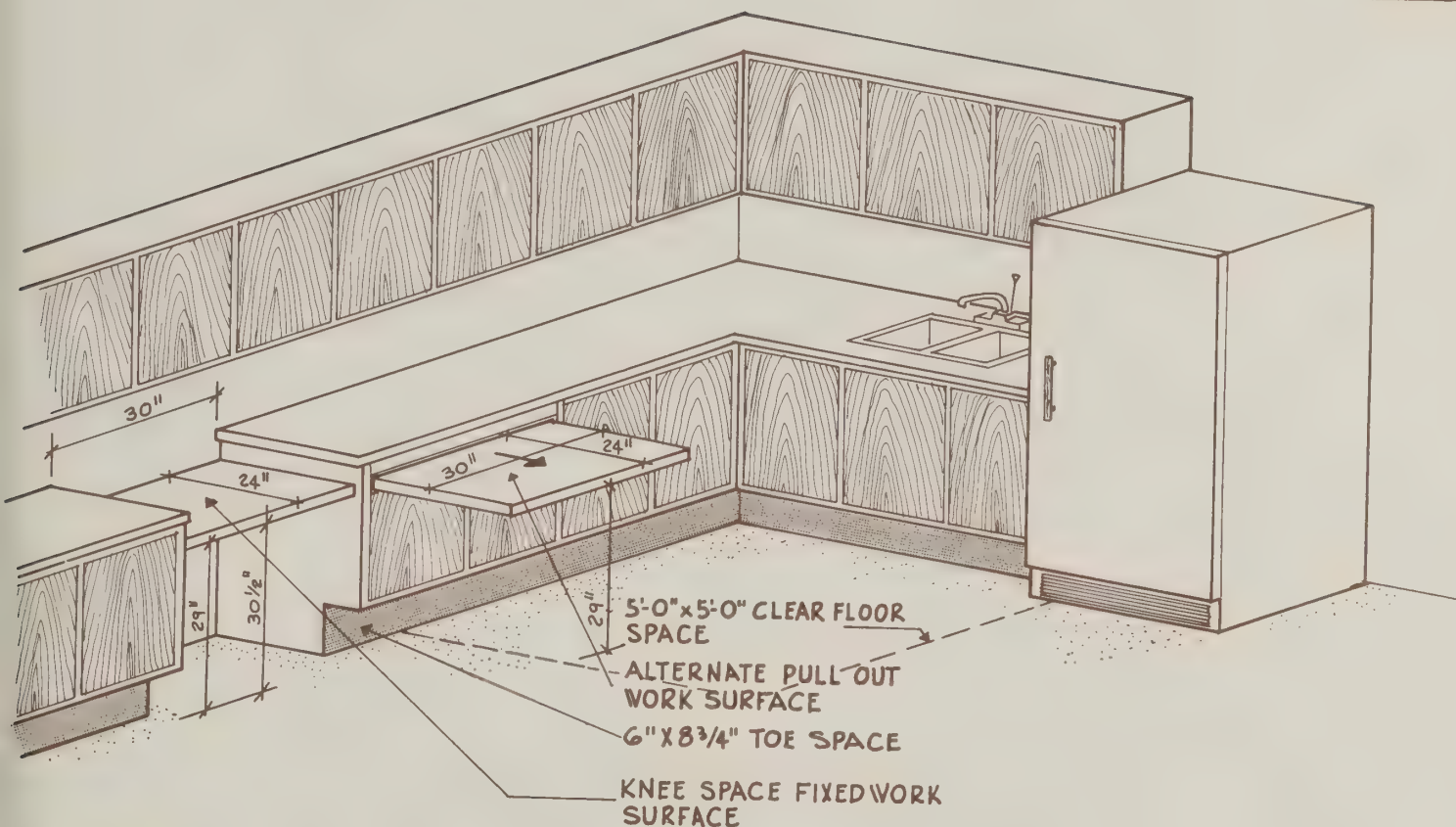
APPENDIX C (b) KITCHENS:

2.) NORMAL BASE CABINET TOE SPACE SHALL BE MINIMUM 6" DEEP & 8³/₄" HIGH.

8.) MINIMUM OF 5'-0" CLEAR FLOOR SPACE BETWEEN CABINETS & CABINETS, OR CABINETS AND WALLS SHALL BE PROVIDED UNLESS 1 OR 2 6" TOE SPACES ARE PROVIDED IN ACCORDANCE WITH 11x4.6(a)

13.) KNEE SPACE FOR SEATED WORK SHALL BE PROVIDED UNDER COUNTER AND SHALL BE A MINIMUM OF 30" WIDE, 29" HIGH & 24" DEEP. TOP OF THE COUNTER SHALL BE A MINIMUM 30" WIDE, 24" DEEP & NO MORE THAN 30¹/₂" ABOVE FLOOR TO TOP

14.) DOORS SHALL HAVE 32" CLEAR OPENING, SHALL SWING OUT OR SLIDE & BE OPERABLE BY A SINGLE EFFORT.



KITCHEN REQUIREMENTS FOR 11x5.2 & 11x5.3

(11x)5.3—minimum requirements for the construction of privately owned residential units intended to be rented or leased in residential projects with more than 10 individual residential units.

In addition to other requirements in other sections of the Handicapped Section of the North Carolina State Building Code, with the exception of (11X) 4.6, 4.7, 4.8, 4.11, 5.1, 5.2, 6 and 7, 5% or a minimum of one unit, of all individual residential units to be rented or leased in privately-owned residential projects with more than 10 individual residential units, which are not school or institutional shall meet the following minimum requirements: (Note: The other requirements of Code to be met for such units include accessible primary entrances, connecting walkways, etc.)

a) The individual dwelling unit or suite must be on one level throughout unless accessible by wheelchair.

b) Kitchens shall meet or be adjustable to meet the following requirements:

1) A minimum of 5 feet clear floor space between opposite cabinets or

EXAMPLE: If toe space 8¼ inches in height and 6 inches in depth is provided on opposite sides under cabinets, then the clear floor space can be 4 feet x 4 feet. However, if the depth of the toe space is 12 inches on each of opposite sides of a kitchen room, the additional clear floor space would still have to be 4 feet x 4 feet.

2) For seated work in a chair or a wheelchair, an opening shall be provided under the counter for knee space. This opening shall be a minimum of 30 inches in width, 29 inches in height, and 24 inches in depth or the top of the counter under which this knee space is provided, shall be pull out or adjustable and be a minimum of 30 inches in width, 24 inches in depth, and no higher than 30½ inches from the floor.

3) The door opening shall be no less than 32 inches clear opening. The door shall swing out or slide.

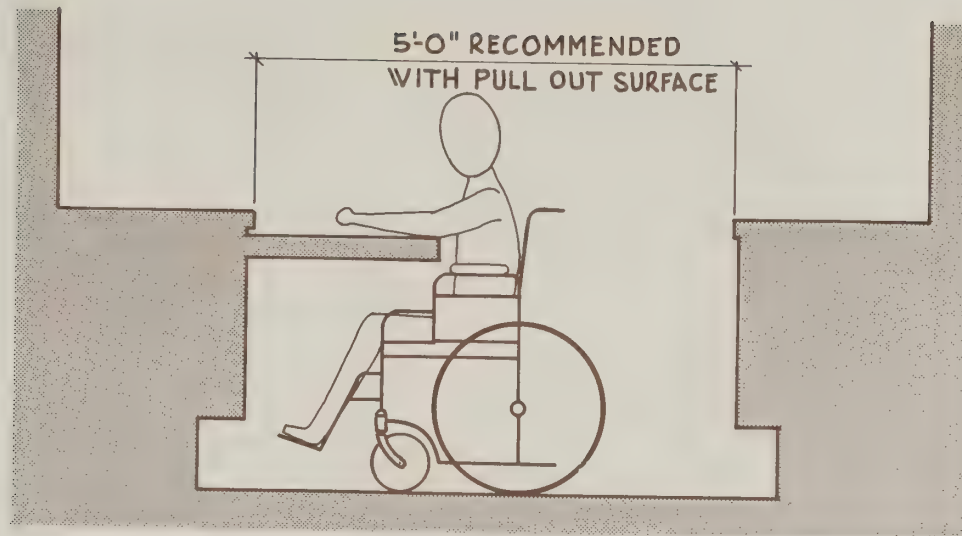
11x5.3 minimum requirements for privately-owned residential units to be rented or leased in residential projects with more than 10 units.

5% OR A MINIMUM OF 1 UNIT SHALL MEET THE OTHER REQUIREMENTS OF THE CODE FOR GRADING, WALKS, PARKING LOTS, RAMPS, ENTRANCES, DOORS, STAIRS, FLOORS, ELEVATORS, & CONTROLS.

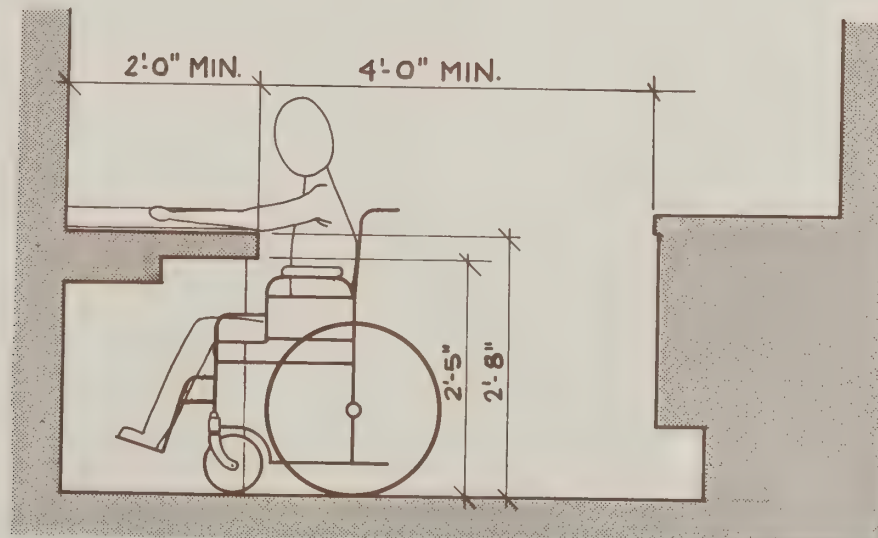
11x5.3(a) UNITS OR SUITES MUST BE ON ONE LEVEL OR MADE ACCESSIBLE THROUGHOUT BY MEANS OF RAMPS OR ELEVATORS.

11x5.3(b) KITCHENS SHALL MEET OR BE ADJUSTABLE TO THE FOLLOWING REQUIREMENTS:

- 1) MINIMUM 5'-0" x 5'-0" CLEAR FLOOR BETWEEN CABINETS & CABINETS, OR CABINETS & WALL, EXCEPT WHERE 1 OR 2 6" x 8 3/4" TOE SPACES ARE PROVIDED.
- 2) KNEE SPACE FOR SEATED WORK SHALL BE PROVIDED UNDER COUNTER & SHALL BE A MINIMUM OF 30" WIDE, 29" HIGH, & 24" DEEP.
- 3) DOORS SHALL HAVE 32" CLEAR OPENING & SWING OUT OR SLIDE.

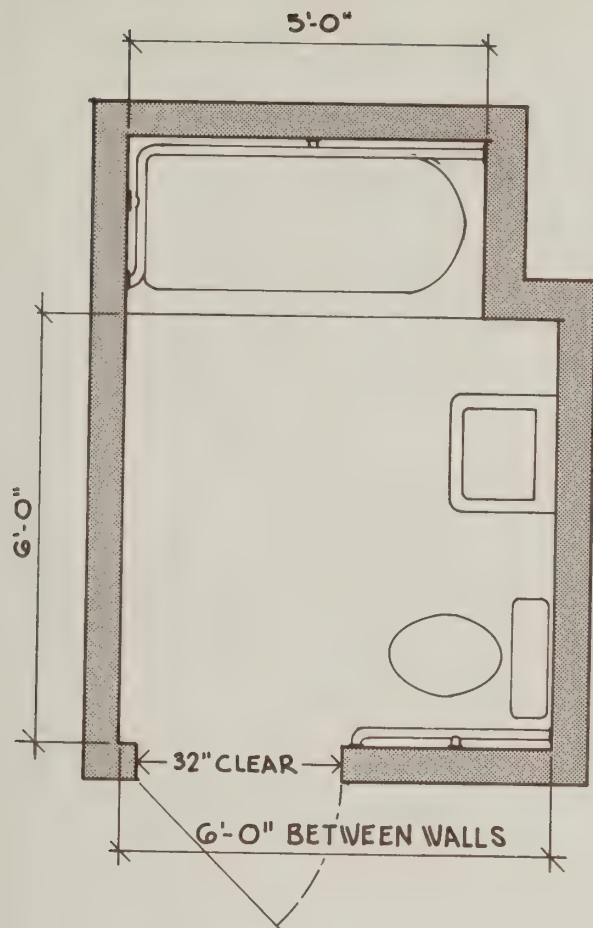


PULL OUT OR BUILT IN WORK SURFACE WITH KNEE SPACE



(11x)5.3

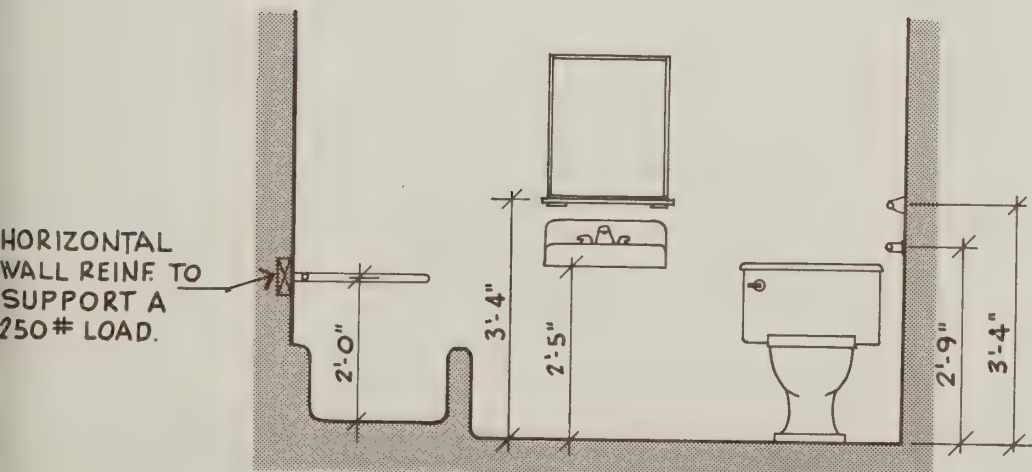
- c) One full bathroom in each unit or suite shall meet or be adjustable to meet the following requirements:
 - 1) The clear door opening shall be no less than 32 inches. The door shall swing out or slide.
 - 2) A minimum of 6 feet width between walls shall be required except at the end of the tub wall.
 - 3) A self-supporting wall-hung lavatory mounted 29 inches to apron shall be provided where 5 x 5 feet floor space is not provided.
 - 4) Walls shall be capable of supporting handrails which can support a 250 pound load.
 - 5) Where mirrors are provided, at least one mirror shall be placed above lavatories no higher than 40 inches above the floor, measured from the bottom of the mirror.
 - 6) Where provided, toilet rooms shall have at least one towel rack mounted at a height not to exceed 40 inches from the floor.
 - 7) The maximum hot water temperature for all plumbing fixtures shall not exceed 120° F.; or exposed hot water lines and drains shall be fully insulated.



WALLS ADJACENT TO TUBS SHALL BE REINFORCED FOR GRAB BARS CAPABLE OF SUPPORTING A 250# LOAD. **PREFERRED *** STAINLESS STEEL OR CHROME HANDRAIL, 1 1/2" IN DIAMETER, SHOULD BE MOUNTED 2'-0" ABOVE BOTTOM OF TUB & ALONG ONE SIDE & ONE END OF TUB WALL.

UNLESS 5'-0" X 5'-0" CLEAR FLOOR SPACE IS PROVIDED, WALL HUNG LAVATORY MUST BE USED. IF LAVATORY VANITY CABINET IS USED, 11x4.6 (a) APPLIES (SEE PAGE 55)

HANDRAIL 1 1/2" IN DIAMETER 33" ABOVE FLOOR **PREFERRED ***



HORIZONTAL WALL REINF TO SUPPORT A 250# LOAD.

11x5.3(c) ONE FULL BATHROOM IN EACH UNIT OR SUITE SHALL MEET OR BE ADJUSTABLE TO THE FOLLOWING REQUIREMENTS:

- 1) DOORS SHALL HAVE A 32" CLEAR OPENING & SWING OUT OR SLIDE.
- 2) 6'-0" REQUIRED BETWEEN WALLS EXCEPT AT END OF TUB WALL.
- 3) WHERE 5'-0" X 5'-0" CLEAR FLOOR SPACE IS NOT PROVIDED, A WALL HUNG LAVATORY MUST BE USED.
- 4) WALL ADJACENT TO TOILETS AND TUBS SHALL BE CAPABLE OF SUPPORTING HANDRAILS WHICH CAN SUPPORT A 250 POUND LOAD.
- 5) WHERE PROVIDED AT LEAST ONE MIRROR SHALL BE PLACED ABOVE LAVATORY NO HIGHER THAN 40" ABOVE FLOOR.
- 6) WHERE PROVIDED AT LEAST ONE TOWEL RACK SHALL BE NOT MORE THAN 40" ABOVE FLOOR.
- 7) MAXIMUM WATER TEMPERATURE SHALL NOT EXCEED 120°, OR EXPOSED HOT WATER LINES & DRAINS SHALL BE FULLY INSULATED.

[11x]6 seating for assembly

In places of assembly with fixed type seating and a capacity greater than 75 seats, identified spaces for the wheelchair handicapped shall be provided at a rate of no less than 1%, or a minimum of one, whichever is greater, of the total seating capacity. An additional number of identified seats equal to 1%, or a minimum of one, whichever is greater, of the total seating capacity shall be set aside for the handicapped with crutches and/or walkers.

- a) Such spaces and seating shall be located as an integral part of the overall floor plan of said assembly area.
- b) Seats and spaces shall be designed to conform with the requirements of accessibility for wheelchairs and crutches described in Appendix A.

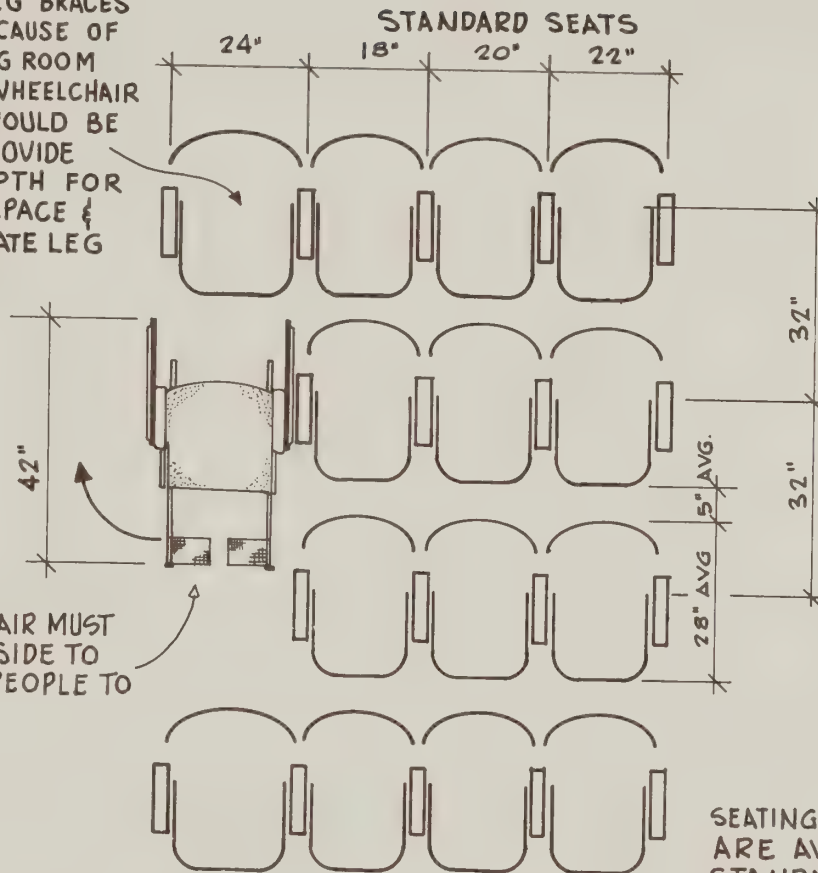
(11x)6 seating for assembly

THIS SEAT IS BEST FOR REQUIRED SEATING FOR THOSE WITH LEG BRACES & CRUTCHES BECAUSE OF ADDITIONAL LEG ROOM PROVIDED BY WHEELCHAIR SPACE. SEAT SHOULD BE 24" WIDE TO PROVIDE SUFFICIENT DEPTH FOR WHEELCHAIR SPACE & TO ACCOMMODATE LEG BRACES.

AI SLE

WHEELCHAIR MUST PIVOT TO SIDE TO ALLOW PEOPLE TO PASS.

NOTE: SIGHT LINES MAY BE INTERRUPTED BY WHEELCHAIR PERSON BECAUSE WHEELCHAIR SEAT IS HIGHER THAN FIXED SEATS. THIS MAY BE OVERCOME BY DIAGONAL OR OTHER CHAIR ARRANGEMENT.

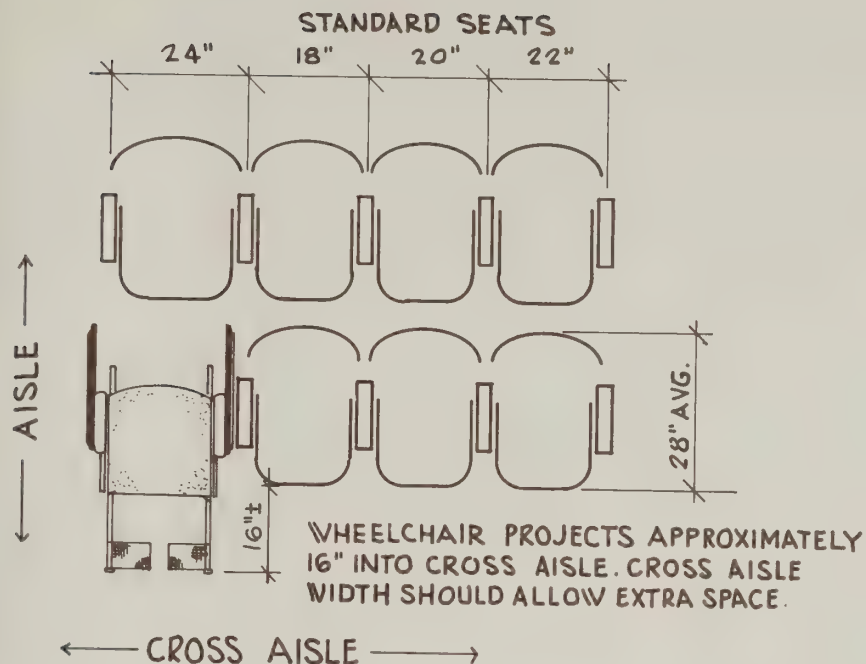


SEATING DIMENSIONS ARE AVERAGE STANDARD FIXED SEATING.

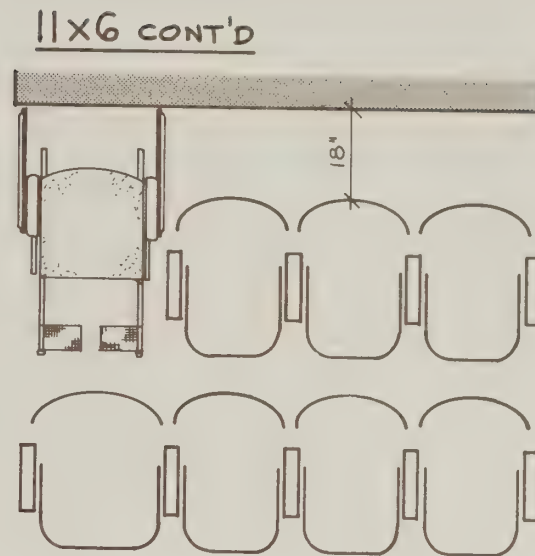
IN ASSEMBLY PLACES (THEATRES, AUDITORIUMS, COURTS, STADIA, ARENAS, ETC.) WITH MORE THAN 75 SEATS, 1%, OR A MINIMUM OF ONE, OF TOTAL SEATING CAPACITY MUST BE DESIGNATED IDENTIFIED SPACES FOR WHEELCHAIR HANDICAPPED AND AN ADDITIONAL 1%, OR A MINIMUM OF ONE, MUST BE SET ASIDE FOR HANDICAPPED WITH CRUTCHES AND/OR WALKERS.

(a) HANDICAPPED SEATING SPACES MUST BE AN INTEGRAL PART OF THE SEATING PLAN AND NOT SEGREGATED.

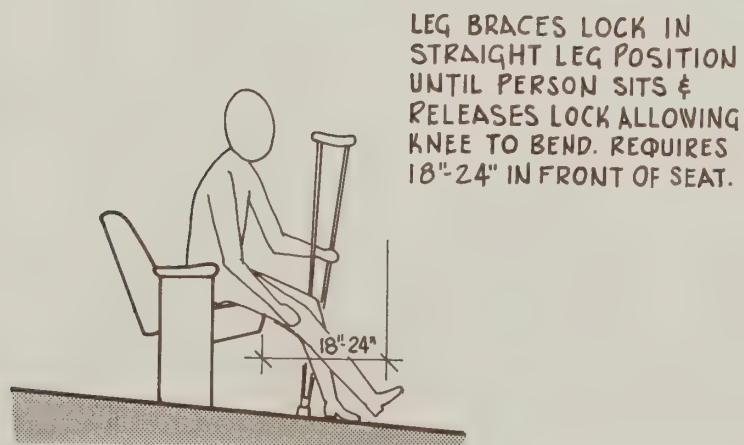
(b) SEATS AND SPACES SHALL BE DESIGNED TO CONFORM WITH THE REQUIREMENTS OF ACCESSIBILITY FOR WHEELCHAIRS AND CRUTCHES DESCRIBED IN APPENDIX A. (SEE FOLLOWING PAGES.)



IF BACK WALL IS HELD 18" AWAY FROM TOP OF SEAT BACK WHEELCHAIR CAN PARK AS SHOWN WITHOUT BLOCKING ROW.



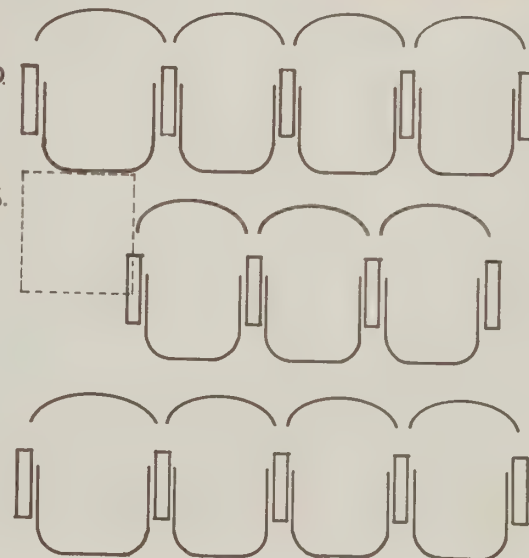
WHEELCHAIR SEATING SPACE @ CROSS AISLE



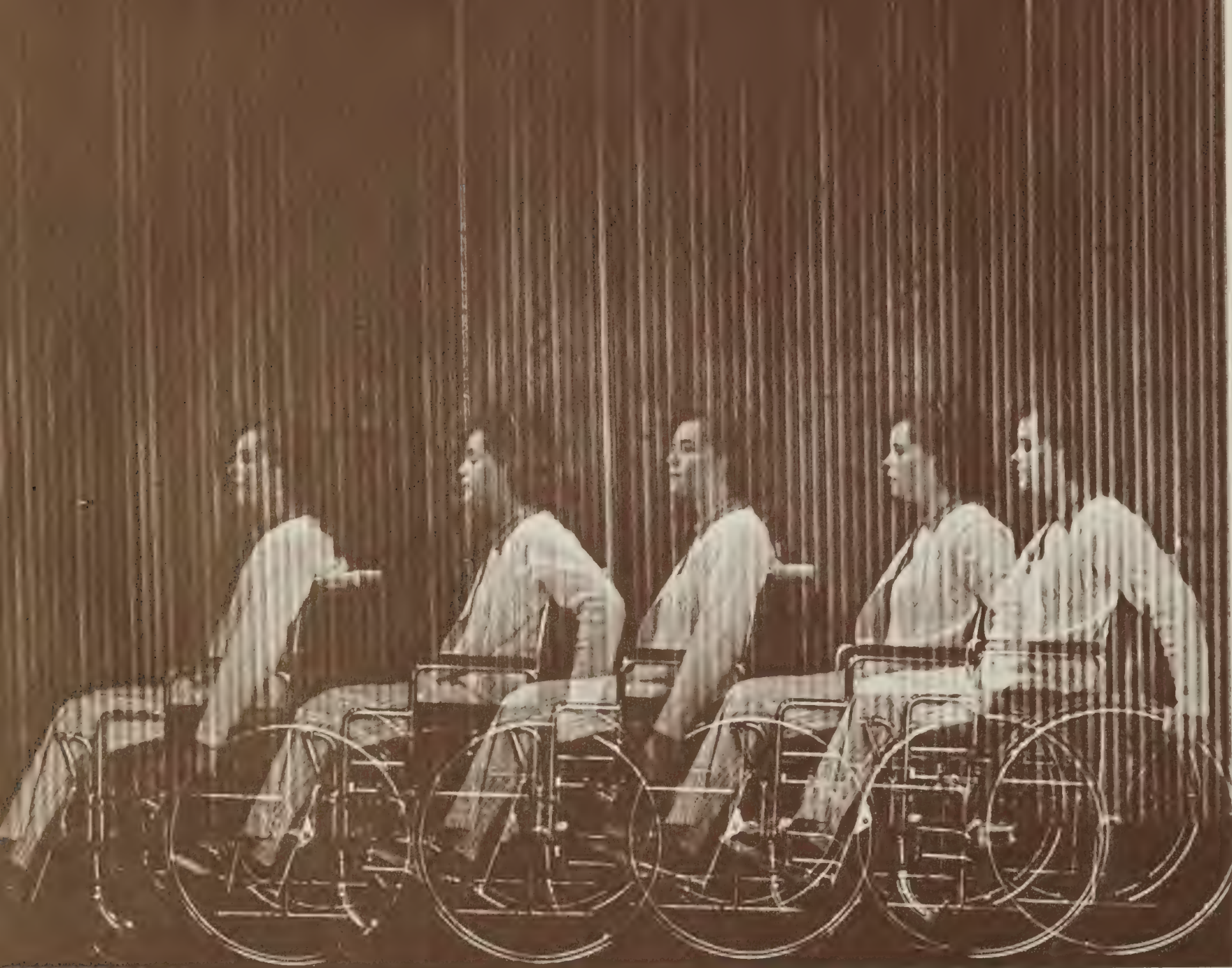
LEG BRACES LOCK IN STRAIGHT LEG POSITION UNTIL PERSON SITS & RELEASES LOCK ALLOWING KNEE TO BEND. REQUIRES 18"-24" IN FRONT OF SEAT.

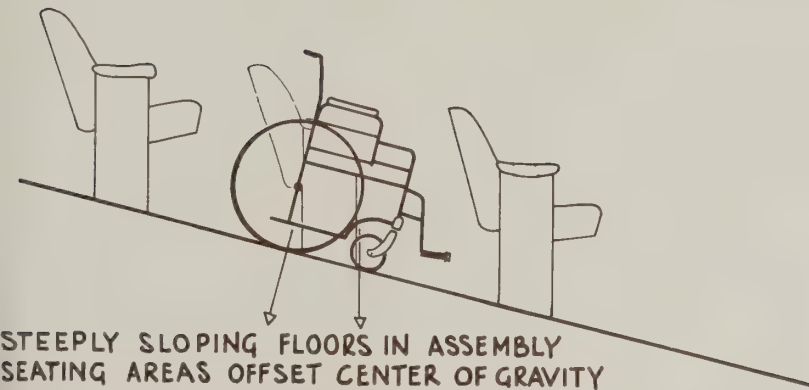
WHEELCHAIR SEATING SPACE @ BACKWALL

STAGGERED SEATING CAN PROVIDE ADEQUATE SPACE FOR AMBULANT HANDICAPPED. SEAT BEHIND INSET ROW SHOULD BE 24" WIDE MINIMUM TO ALLOW EXTRA SEAT WIDTH FOR LEG BRACES. SEATS BEHIND WHEELCHAIR SPACE AND AT CROSS AISLES ALSO ALLOW SPACE FOR PERSONS WITH LEG BRACES. (SEE ABOVE)



SEATING SPACE REQUIREMENTS FOR BRACES & CRUTCHES

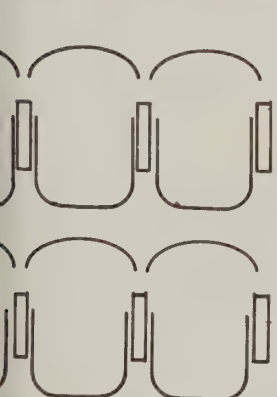




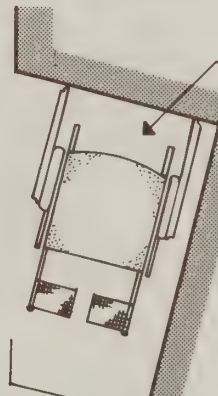
STEEPLY SLOPING FLOORS IN ASSEMBLY SEATING AREAS OFFSET CENTER OF GRAVITY FOR WHEELCHAIRS CAUSING DISCOMFORT DURING LONG PERFORMANCES. FOR THIS REASON IT IS PREFERRED THAT THE WHEELCHAIR SPACES BE LOCATED WHERE FLOOR CAN REMAIN LEVEL AS AT CROSS AISLES, FRONT & REAR OF THEATER, OR IN BOXES TO THE SIDE.



SLOPING FLOORS IN ASSEMBLY SEATING

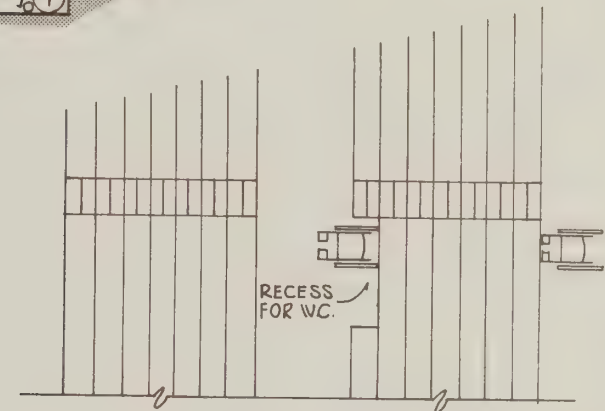


↑ SIDE AISLE
↓ SIDE AISLE



LEVEL FLOOR MAY BE USED BY NON-HANDICAPPED WITH PORTABLE SEATING WHEN NOT REQUIRED FOR WHEELCHAIR USE.

SPECIAL WHEELCHAIR BOX @ SIDE AISLE

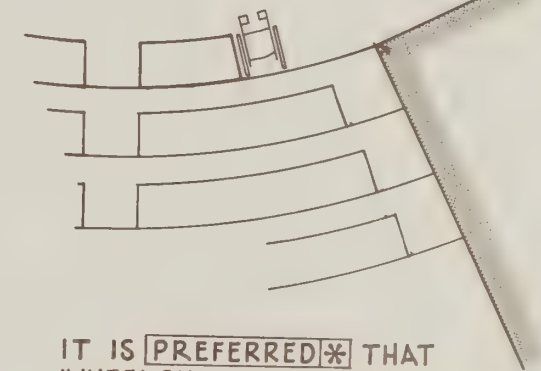
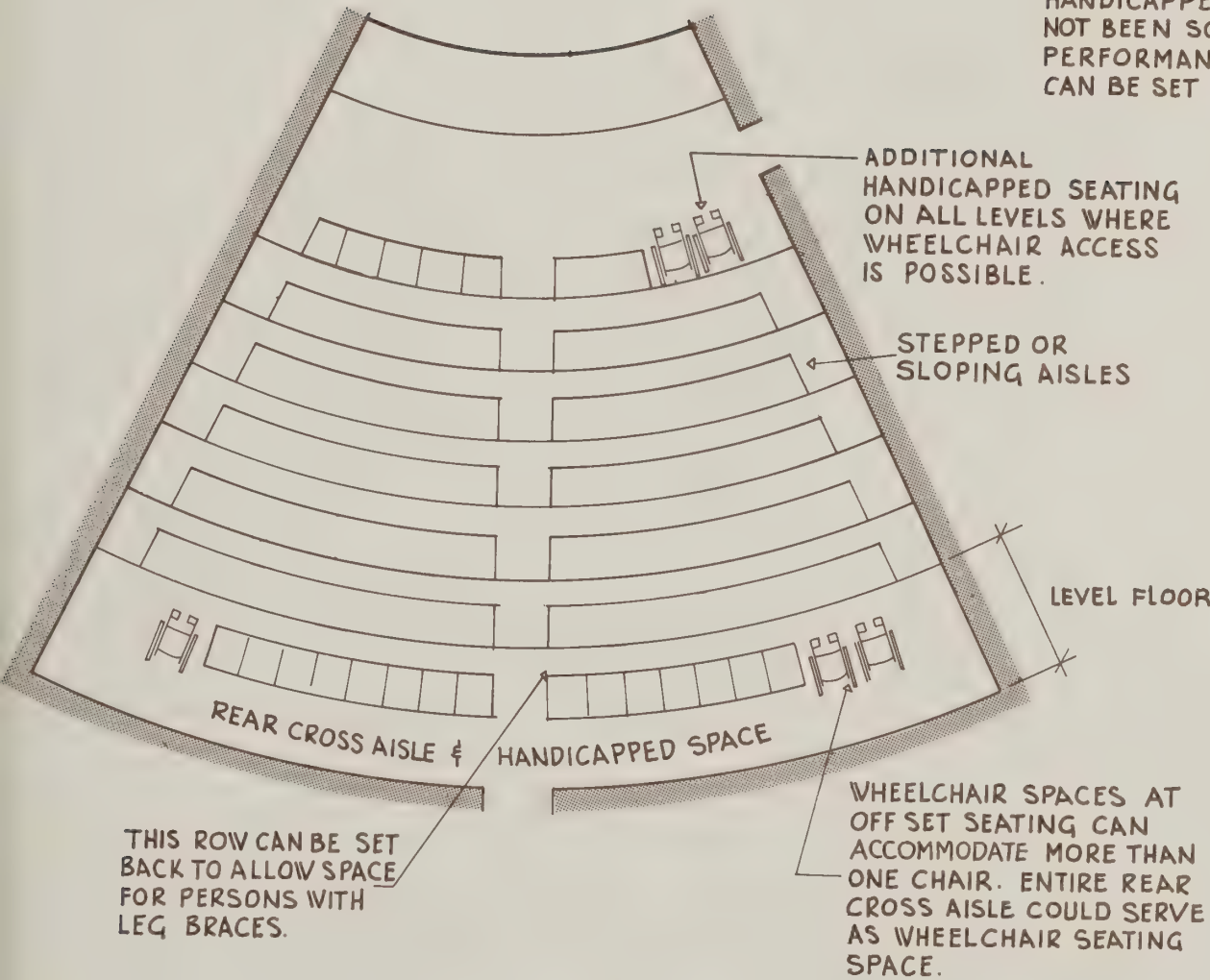


WHEELCHAIR SPACES IN ASSEMBLY AREAS HAVING STEPPED RISER SEATING CAN BEST BE LOCATED IN CROSS AISLES AT FRONT, REAR, OR CENTER OF SEATING, PROVIDED SUFFICIENT SPACE IS ALLOWED IN CROSS AISLES SO WHEELCHAIRS DO NOT INFRINGE ON REQUIRED AISLE WIDTH. SPACES SHOULD BE LOCATED ON ALL POSSIBLE LEVELS TO GIVE HANDICAPPED SOME CHOICE OF LOCATION.

WHEELCHAIR SEATING @ STEPPED RISERS (BENCH TYPE STADIUM SEATING)

WHERE LOSS OF REVENUE IS A PARTICULAR CONCERN FOR WHEELCHAIR SPACES THAT GO UNUSED, CHAIRS CAN BE PEDESTAL MOUNTED WITH QUICK CONNECT LATCHES TO BE REMOVABLE. IF HANDICAPPED SPACES HAVE NOT BEEN SOLD ON PERFORMANCE DATES, CHAIRS CAN BE SET IN PLACE.

STORAGE SPACE WITH PEDESTAL MOUNTS FOR TEMPORARY PLACEMENT OF CHAIRS TO PROVIDE WHEELCHAIR SPACE.



IT IS PREFERRED THAT WHEELCHAIR ACCESS & SEATING SPACE BE PROVIDED IN BOTH BALCONY & BOX SEAT AREAS.

EXAMPLE PLAN : SMALL THEATRE

[11x]7 instructional facilities, dining halls, and other areas utilizing fixed facilities

- a) Where fixed tables are used, a minimum of 2%, or at least one, shall have 29 inches clearance under the table top, and if aprons are greater than 2 inches, they shall be recessed 1 foot. In dining areas and libraries, all fixed tables shall meet this requirement.
- b) Width between fixed tables shall be a minimum of 5 feet 5 inches.
- c) Outside rail heights of fixed tray slides in dining areas shall be no greater than 34 inches.
- d) Aisles between fixed tray slides and control railings in dining areas shall be a minimum of 34 inches.
- e) In areas with 24 or more fixed stations or seats (e.g., lecture halls, libraries, dining areas, and other work or study areas), or 2%, or at least one station or seat, shall be designed to conform with the requirements of accessibility for wheelchairs and crutches described in Appendix A.

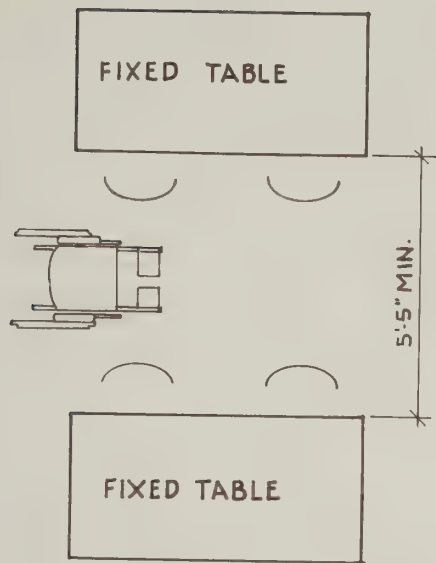
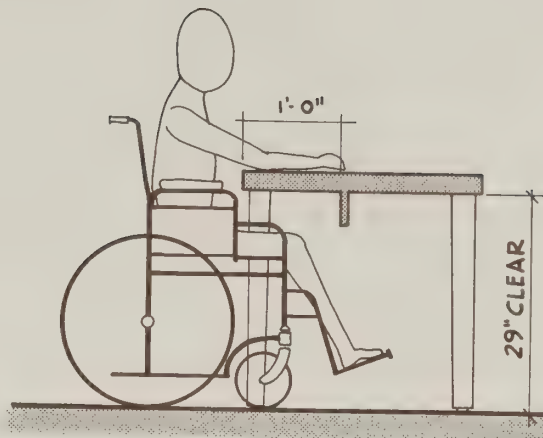


TABLE SPACING



CLEARANCE UNDER TABLES MUST BE 29" CLEAR TO BOTTOM OF TABLE TOP. APRONS IF USED MUST BE RECESSED 1'-0" UNDER TABLE.

TABLE HEIGHTS

(11x) 7 instructional facilities, dining halls, & other areas with fixed facilities.

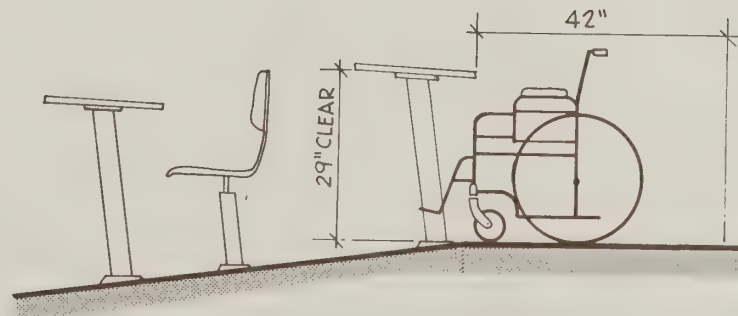
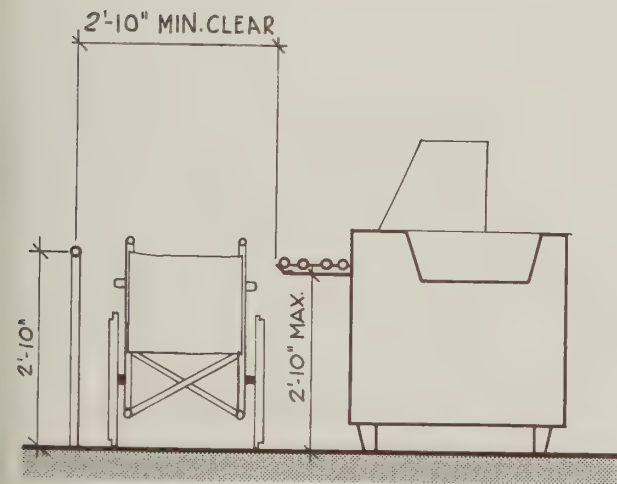
(a) WHERE FIXED TABLES ARE USED, A MINIMUM OF 2% OR AT LEAST ONE, SHALL HAVE 29" CLEARANCE FROM FLOOR TO ALLOW WHEELCHAIR TO PULL UP UNDER TABLE. ALL TABLES IN DINING AREAS & LIBRARIES SHALL MEET THIS REQUIREMENT.

(b) WIDTH BETWEEN FIXED TABLES SHALL BE 5'-5" .

(c) OUTSIDE RAIL HEIGHTS OF TRAY SLIDES IN DINING AREAS SHALL BE NO HIGHER THAN 34" .

(d) AISLES AT FOOD SERVICE LINES BETWEEN TRAY SLIDES & CONTROL BARS SHALL BE 34" WIDE MINIMUM.

(e) IN AREAS WITH 24 OR MORE FIXED INDIVIDUAL STATIONS OR SEATS, 2% OR AT LEAST ONE STATION OR SEAT MUST BE ACCESSIBLE TO WHEELCHAIRS.



2% OF THE SEATS AT FIXED STATION FACILITIES MUST BE OMITTED OR PORTABLE TO PROVIDE SPACES FOR WHEELCHAIR USE.

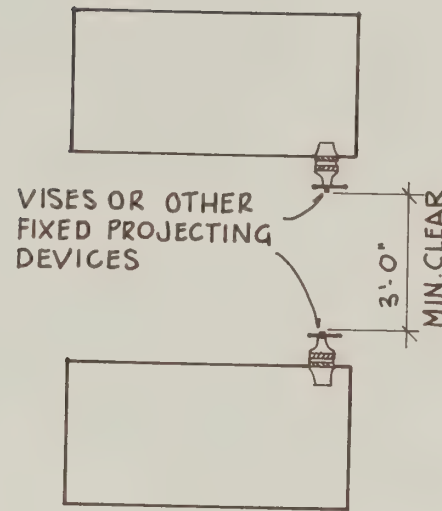
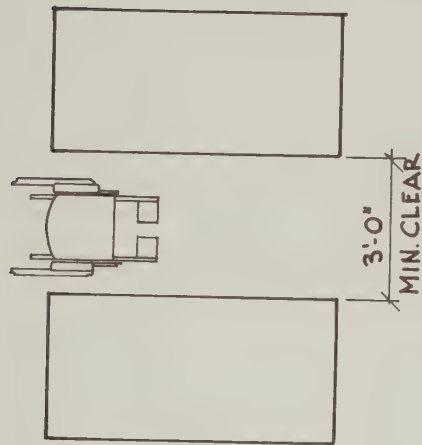
FIXED STATION SEATING

FOOD SERVICE RAILS

(11x)7—fixed facilities

- f) In laboratories and other work or study areas using work benches, each "handicapped station" shall have a low work bench with a clear minimum of 29 inches, (floor to underside of work area) and shall not have an apron.
- g) Aisles between fixed work benches shall have a minimum clear width of 3 feet.
- h) Aisles between fixed stacks in libraries shall be a minimum width of 42 inches. Exception: in additions and remodeling in which aisle spaces are restricted by existing multi-tiered stack structural systems which must be maintained throughout the building, and where floor to floor heights must be maintained, aisles may be a minimum of 32 inches.

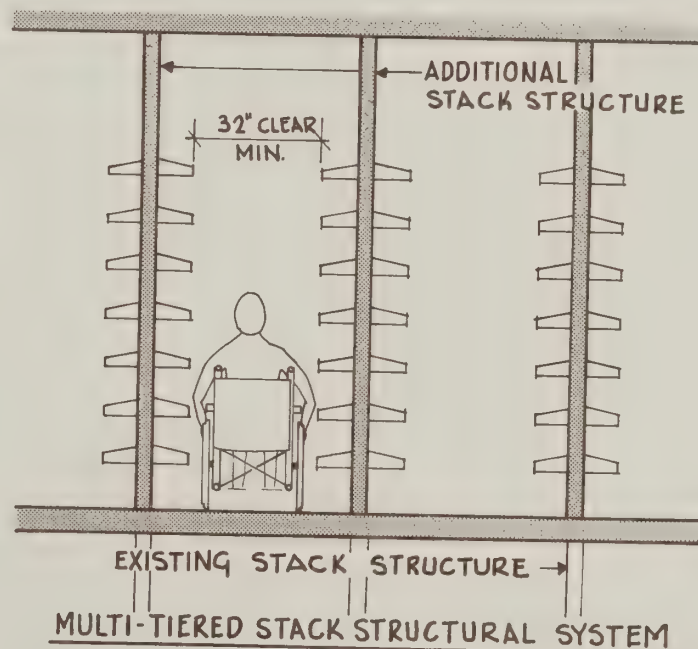
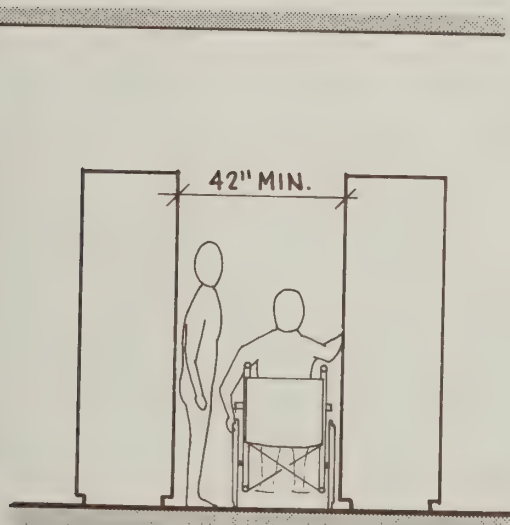
11x7 FIXED FACILITIES (CONT'D)



(P) IN LABORATORIES AND OTHER WORK AREAS USING WORK BENCHES, HANDICAPPED STATIONS SHALL HAVE A LOW WORK BENCH FOR USE FROM WHEELCHAIR WITH MINIMUM CLEARANCE FROM FLOOR TO UNDERSIDE OF WORK SURFACE OF 29" & SHALL NOT HAVE APRONS.

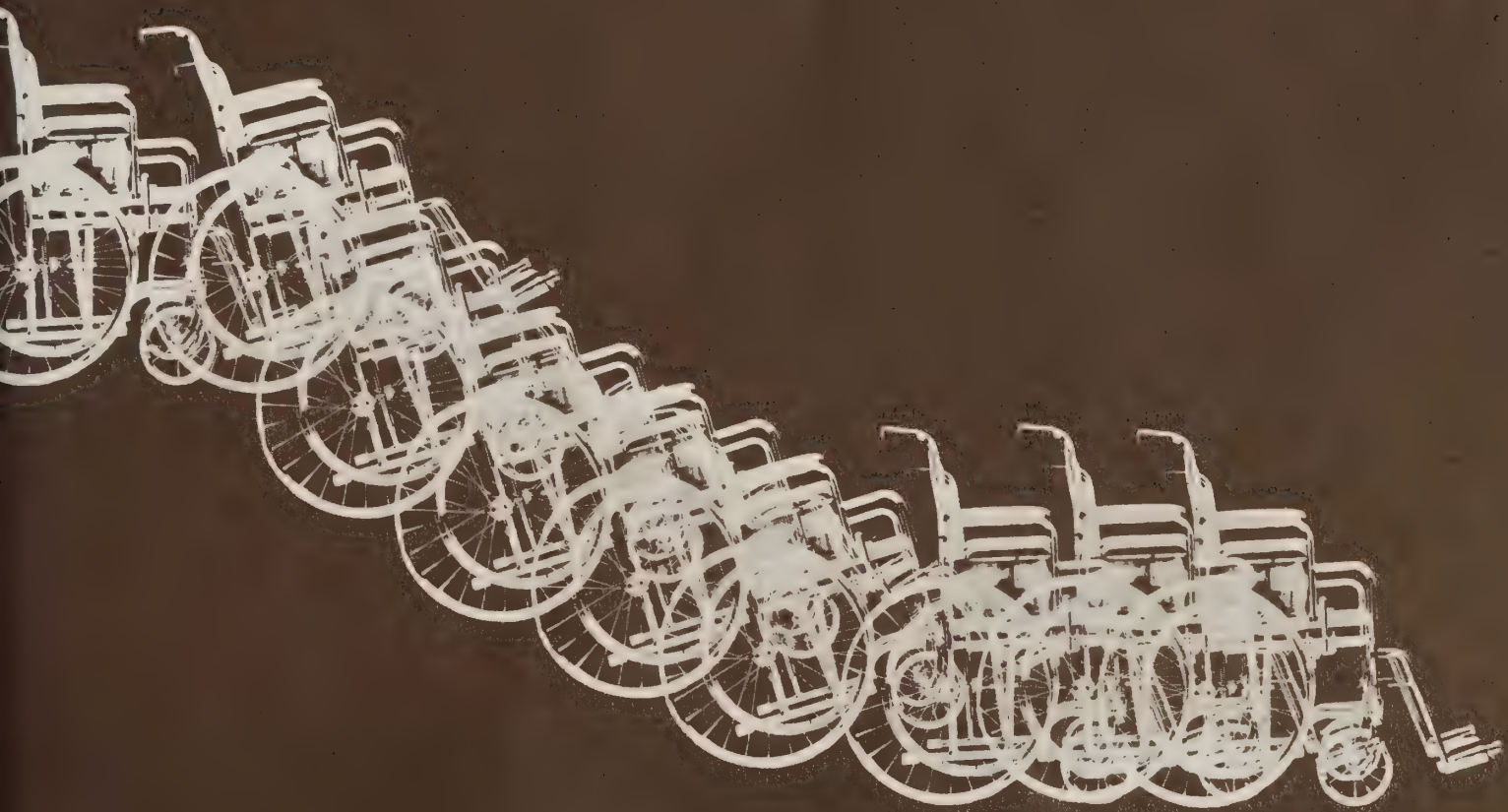
(q) AISLES BETWEEN FIXED WORK BENCHES SHALL HAVE A MINIMUM CLEAR WIDTH OF 3 FEET.

WORK BENCH SPACING



(h) AISLE BETWEEN FIXED STACKS IN LIBRARIES SHALL BE A MINIMUM OF 42" CLEAR EXCEPT IN ADDITIONS & REMODELING WHERE EXISTING MULTI-TIER STRUCTURAL SYSTEMS MUST BE MAINTAINED THROUGHOUT THE BUILDING, THEN AISLES MAY BE A MINIMUM OF 32".

LIBRARY STACK SPACING



APPENDIX



appendix A—design specifications

(1)—wheelchair specifications

The collapsible-model wheelchair of tubular metal construction with plastic upholstery for back and seat is most commonly used. The standard model of all manufacturers falls within the following limits, which were used as the basis of consideration.

- 1) Length: 42 inches
- 2) Width, when open: 27 inches average, 29 inches maximum
- 3) Height of seat from floor: 19½ inches
- 4) Height of armrest from floor: 29 inches
- 5) Width, when collapsed: 11 inches

(2)—fixed turning radius, wheel to wheel

- a) The fixed turning radius of a standard wheelchair, wheel to wheel, (the tracking of the castor wheels and large wheels of a wheelchair when pivoting on a spot) is 18 inches.

appendix A design specifications

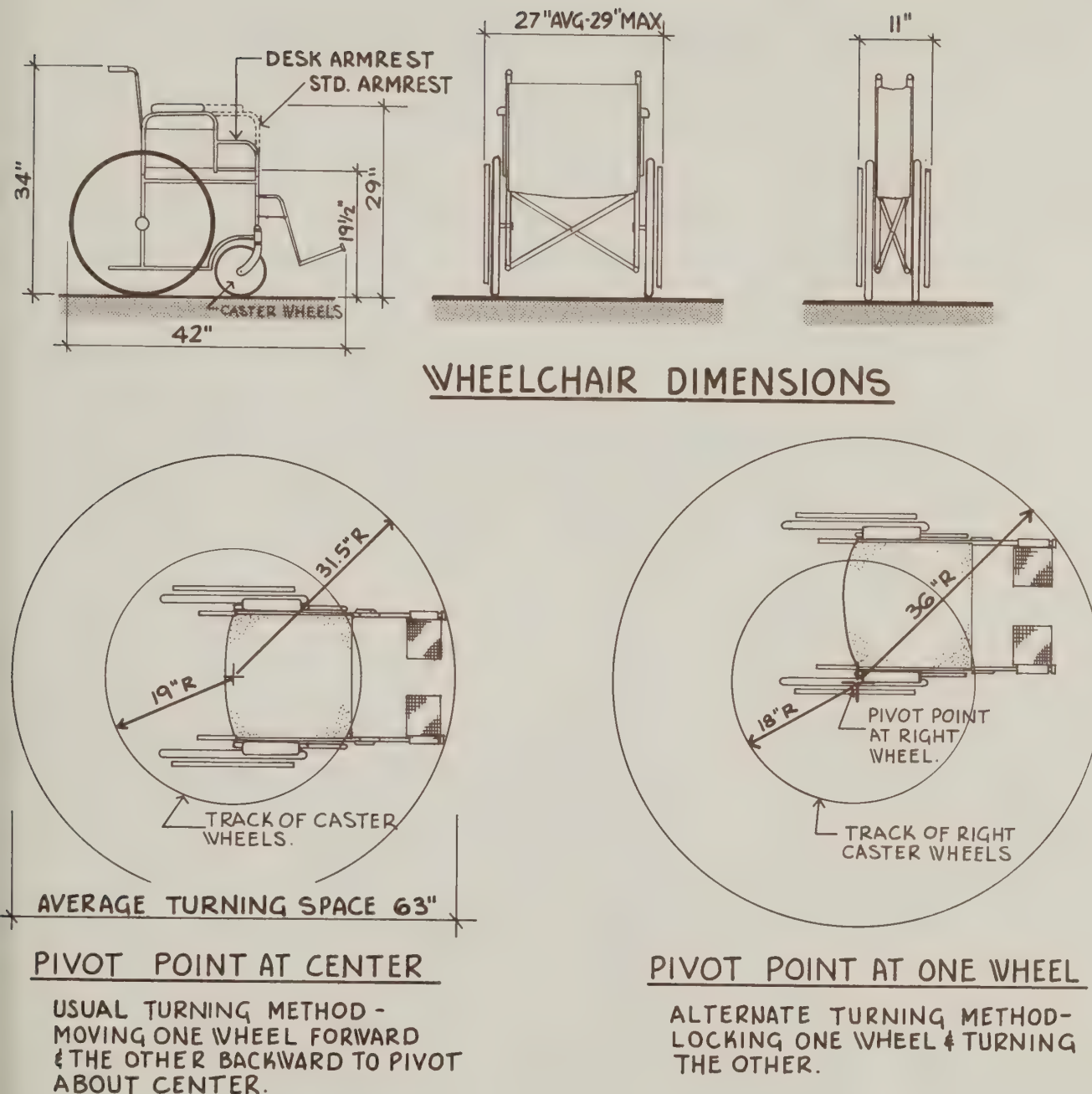
1) WHEELCHAIR SPECIFICATIONS:

THE MOST COMMON TYPE OF WHEELCHAIR USED BY NON-AMBULANT PERSONS OUTDOORS IS THE COLLAPSIBLE TUBULAR METAL CHAIR WITH PLASTIC OR NYLON UPHOLSTERY FOR SEATS & BACKS. TO SUIT NEEDS OF VARIOUS DISABILITIES THESE ARE AVAILABLE WITH NUMEROUS ATTACHMENTS & REMOVABLE PARTS SUCH AS LEG RESTS, ARM RESTS, TILT UP LEG RESTS, TILTING BACK RESTS, ETC. THE STANDARD BASIC CHAIR IS ILLUSTRATED ON THIS PAGE.

2) FIXED TURNING RADIUS OF WHEELCHAIRS

(a) THE FIXED TURNING RADIUS OF WHEELCHAIRS, WHEEL TO WHEEL, WHEN PIVOTING ON A SPOT IS 18" I.E. DISTANCE FROM PIVOT SPOT TO TRACK OF CASTER WHEEL.

THE TURNING RADIUS OF WHEELCHAIRS FROM PIVOT POINT AT CENTER OF CHAIR TO FORMOST PROJECTION OF THE FOOTRESTS IS APPROXIMATELY 31.5"



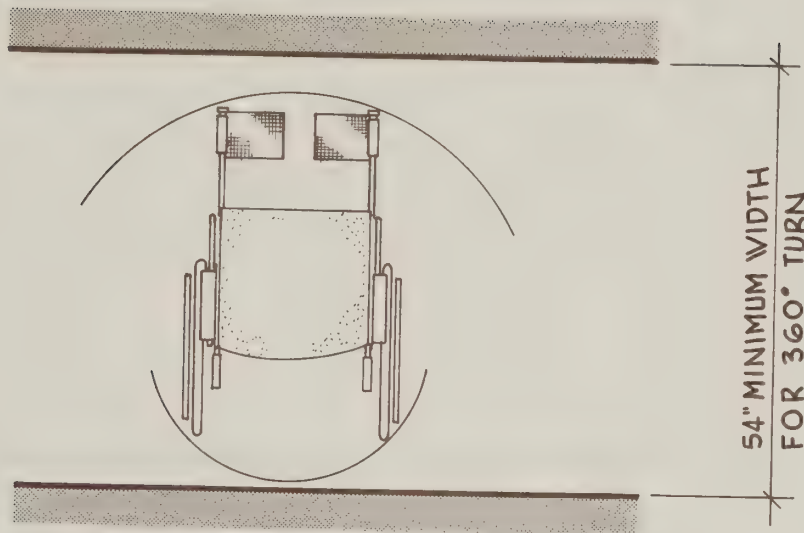
TURNING RADII OF WHEELCHAIR

appendix A

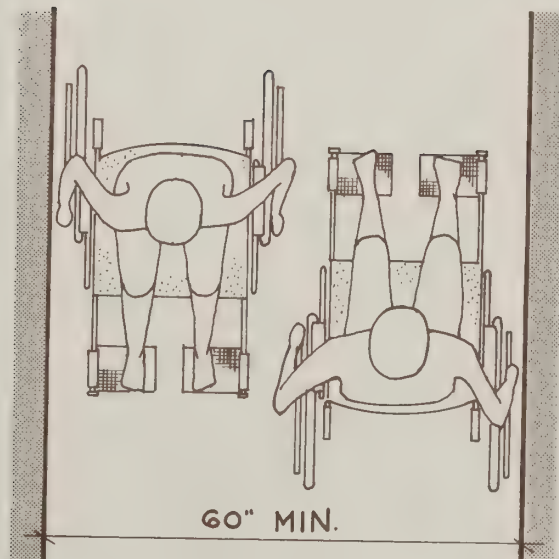
- b) The fixed turning radius, front structure to rear structure, (the turning radius of a wheelchair, left front-foot platform to right rear wheel, or right front-foot platform to left rear wheel, when pivoting on a spot) is 36 inches. The average turning space required is 63 inches x 63 inches.

NOTE: Actually, a turning space that is longer than it is wide, specifically 63 by 56 inches, is more workable and desirable. In an area with two open ends, such as might be the case in a corridor, a minimum of 54 inches between two walls would permit a 360-degree turn.

- c) A minimum width of 60 inches is required for two individuals in wheelchairs to pass each other.



(b) THE FIXED TURNING RADIUS FROM PIVOT POINT AT RIGHT REAR WHEEL TO LEFT FRONT FOOTREST, OR FROM LEFT REAR WHEEL PIVOT POINT TO RIGHT FRONT FOOTREST, IS 36". THE AVERAGE TURNING SPACE REQUIRED IS 63" x 63".



(c) A MINIMUM WIDTH OF 60" IS REQUIRED FOR TWO INDIVIDUALS IN WHEELCHAIRS TO PASS EACH OTHER.



appendix A

(3)—the individual functioning in a wheelchair

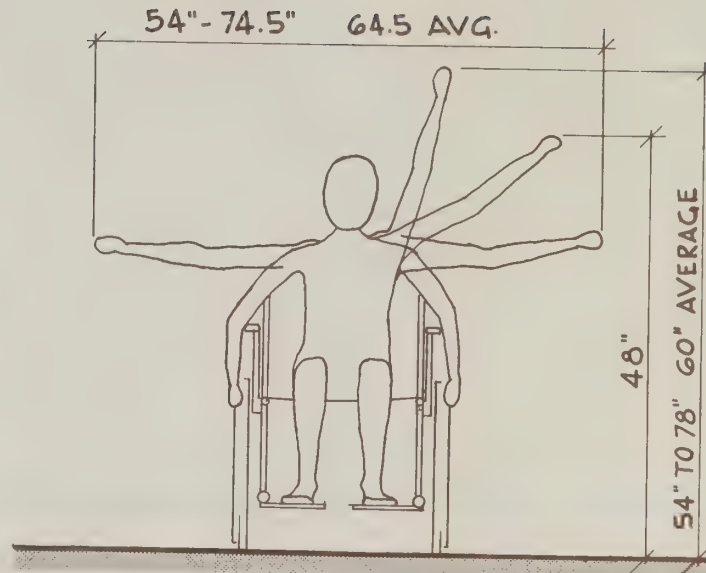
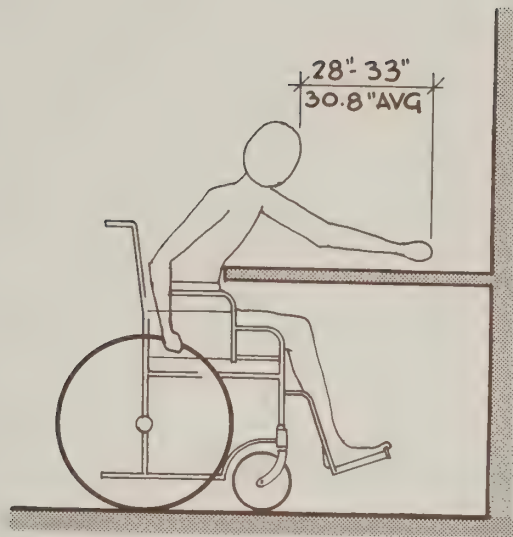
Extremely small, large, strong, or weak and involved individuals could fall outside the ranges of reach and their reach could vary. However, these reaches were determined using a large number of individuals who were functionally trained, with a wide range in individual size and involvement.

- a) The average unilateral vertical reach is 60 inches and ranges from 54 inches to 78 inches.
- b) The average horizontal working (table) reach is 30.8 inches and ranges from 28.5 inches to 33.2 inches.
- c) The bilateral horizontal reach, both arms extended to each side, shoulder high, ranges from 54 inches and averages 64.5 inches.
- d) An individual reaching diagonally, as would be required in using a wall-mounted dial telephone or towel dispenser, would make the average reach (on the wall) 48 inches from the floor.

(4)—the individual functioning on crutches and walkers

Most individuals ambulating on braces or crutches, or both, or on canes are able to manipulate within the specifications prescribed for wheelchairs, although doors present quite a problem at times. However, attention is called to the fact that a crutch tip extending laterally from an individual is not obvious to others in heavily trafficked areas, certainly not as obvious or protective as a wheelchair and is, therefore, a source of vulnerability.

- a) On the average, individuals 5 feet 6 inches tall require 31 inches between crutch tips in the normally accepted gaites. (b) On the average, individuals 6 feet tall require 32.5 inches between crutch tips in the normally accepted gaites.



3) THE INDIVIDUAL FUNCTIONING IN A WHEELCHAIR.

(a) THE AVERAGE UNILATERAL VERTICAL REACH IS 60".

(b) THE AVERAGE HORIZONTAL WORKING REACH IS 30.8".

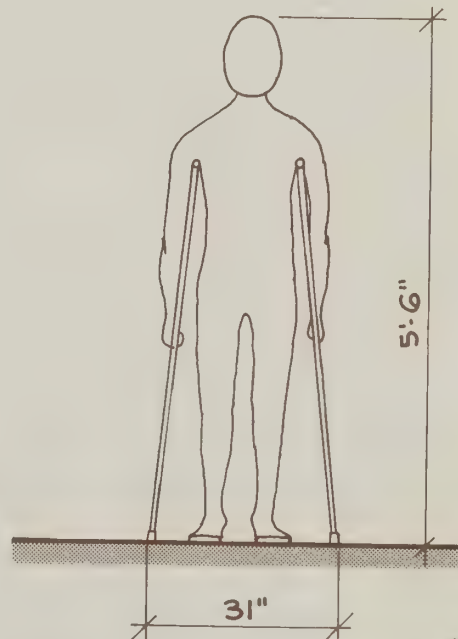
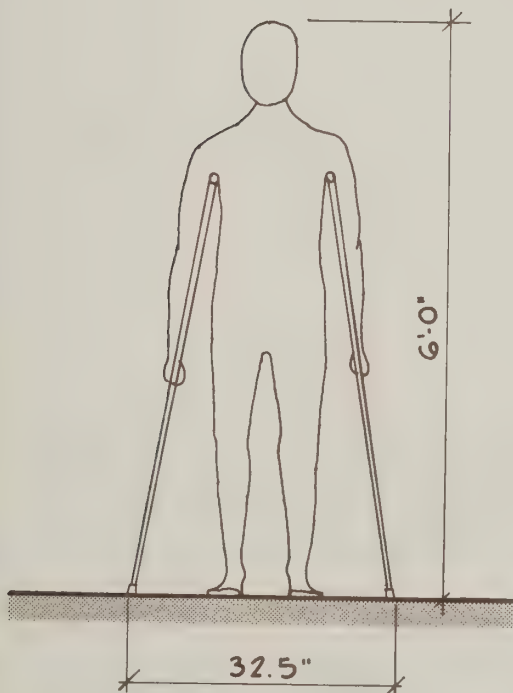
(c) THE BILATERAL HORIZONTAL REACH (BOTH ARMS EXTENDED TO SIDE SHOULDER HIGH) AVERAGES 64.5".

(d) THE DIAGONAL REACH, AS FOR WALL MOUNTED PHONE, IS 48" FROM THE FLOOR.

4) THE INDIVIDUAL FUNCTIONING ON CRUTCHES & WALKERS.

(a) INDIVIDUALS 5'-6" TALL REQUIRE 31" BETWEEN CRUTCH TIPS.

(b) INDIVIDUALS 6'-0" TALL REQUIRE 32.5" BETWEEN CRUTCH TIPS.

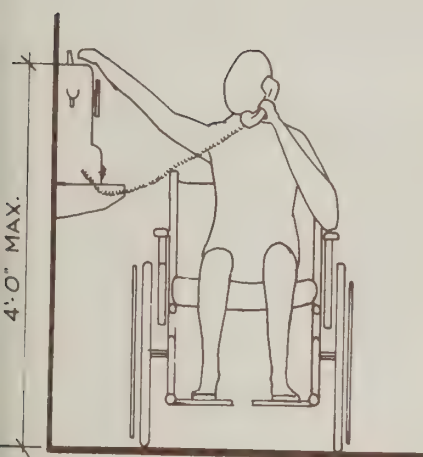
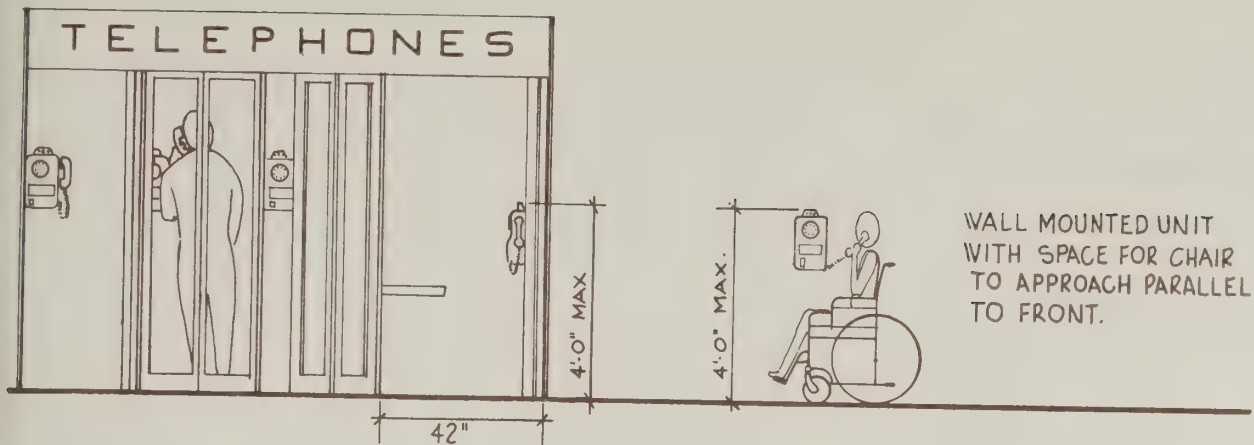


appendix B- public telephones

All "banks" of public telephones should have at least one telephone which can be used by the physically disabled, including those in wheelchairs and those with hearing and sight disabilities.

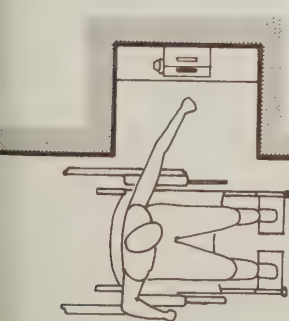
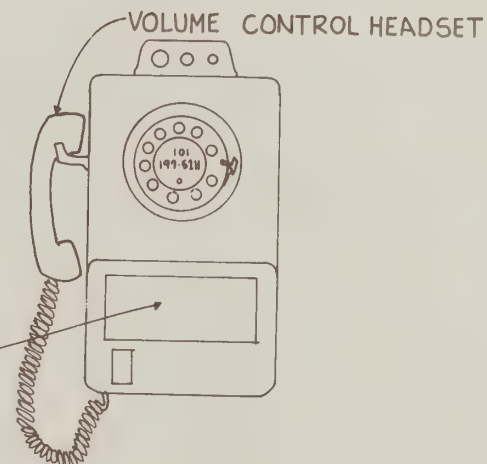
The following are minimum requirements:

- a) The dial and headset shall be placed no more than 4 feet above the floor.
- b) The telephone shall be equipped for those with hearing disabilities with an adjustable volume control for the headset with instructions for use.
- c) The telephone shall be equipped for those with sight disabilities with visual and tactile instructions for use. Large tactile letters shall be used for instructions.
- d) On every floor where telephones are installed, at least one should be placed so that the dial and headset are no more than 4 feet above the floor, and equipped for those with hearing and sight disabilities and so identified with visual and tactile instructions for use.

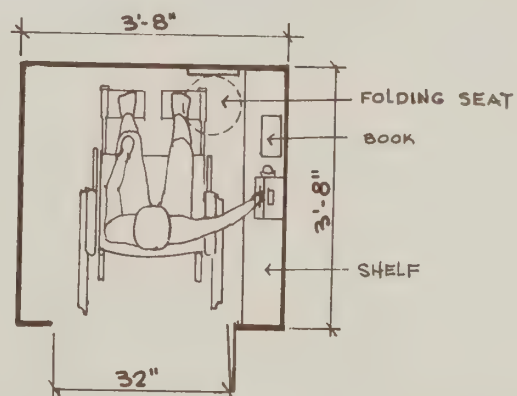


ALL OPERATING MECHANISMS NO MORE THAN 4'-0" ABOVE THE FLOOR.

RAISED OR RECESSED LETTERING FOR INSTRUCTIONS.



TELEPHONES SHOULD NOT BE PLACED IN DEEP ALCOVES WHICH PROHIBIT CLOSE PARALLEL APPROACH.



appendix B – telephones

ALL BANKS OF TELEPHONES SHOULD HAVE AT LEAST ONE TELEPHONE ACCESSIBLE TO THE PHYSICALLY HANDICAPPED AND EQUIPPED AS FOLLOWS.

- 1) ALL OPERATING MECHANISMS (DIAL, HEADSET, COIN SLOT) SHOULD BE 4'-0" ABOVE THE FLOOR OR LESS.
 - 2) HEADSET SHOULD HAVE ADJUSTABLE VOLUME CONTROL WITH INSTRUCTIONS.
 - 3) VISUAL & TACTILE INSTRUCTIONS FOR USE SHOULD BE IN RAISED OR RECESSED LETTERING.
 - 4) SINCE STANDARD ENCLOSED TELEPHONE BOOTHS ARE INACCESSIBLE TO WHEELCHAIRS, BOOTHS FOR HANDICAPPED USE SHOULD HAVE :
 - a) 42" CLEAR FLOOR SPACE BETWEEN WALLS.
 - b) 32" CLEAR DOOR OPENING WITH OUTSWINGING, SLIDING, OR FOLDING DOOR.
- ALSO, c) PHONE UNIT SHOULD BE MOUNTED ON SIDEWALL.
- AND, d) SEAT SHOULD FOLD OUT OF THE WAY.

appendix C-minimum suggestions for the construction of privately owned residential projects with residential units intended to be sold, primarily to the physically handicapped and/or elderly

(Specifications Obtained from Guidelines Utilized by the
Department of Housing and Urban Development)

In addition to other requirements set forth in other sections of the Handicapped Section of the North Carolina State Building Code, 1 out of every 10 residential units should meet the requirements of this Section.

- a) The individual dwelling unit or suite must be on one level throughout.
- b) Kitchens shall meet or be adjustable to meet the following requirements:
 - 1) All work surfaces shall not exceed 34 inches in height except for the portion over a built-in dishwasher.
 - 2) Normal base cabinet toe space shall be 6 inches minimum in depth and 8¾ inches minimum in height.
 - 3) The cooking range-oven combination shall be the drop-in type that will allow for the required toe space and all controls shall be on the front. Where separate cooking surfaces and oven are used, all controls shall be on the front. Top of the oven housing shall not exceed 52 inches in height above the floor.
 - 4) Controls for vent hoods and lights over cooking units shall be mounted in the counter top.
 - 5) An open space under the sink shall be provided. This space shall be centered with the sink and be no less than 2 feet 6 inches wide and 2 feet 5 inches high. Sink drains shall be trapped as near to the back wall of the cabinet as possible.
 - 6) Sink bowl shall not exceed 5 inches in depth.
- 7) The bottom of all wall cabinets shall not be greater than 16 inches above the work surface of the base cabinet except for those cabinets over cooking surfaces, ovens and refrigerators. All shelving in wall cabinets shall be adjustable.
- 8) A minimum of 5 feet clear floor space between opposite cabinets or opposite cabinets and walls shall be provided to allow for wheelchair turns except where 6 inches in depth and 8¾ inches in height toe space is provided in accordance with (11X) 4.6(a)
- 9) Hot water controls shall be provided to insure a maximum temperature of 120°F for water at the sink; or exposed hot water lines and drains shall be fully insulated.
- 10) Sink faucets shall be of the single lever type.
- 11) Kitchen pantries or cabinets used for pantry storage shall have adjustable shelves.
- 12) Refrigerators, where provided, shall be self-defrosting or frostfree with the freezer located on the upper part of the refrigerator.
- 13) For seated work in a chair or a wheelchair, an opening shall be provided under the counter for knee space. This opening shall be a minimum of 30 inches in width, 29 inches in height, and 24 inches in depth. The top of the counter under which this knee space is provided, shall be a minimum of 30 inches in width, 24 inches in depth, and no higher than 30 inches from the floor.
- 14) Doors shall have a clear opening of not less than 32 inches when open, shall swing out or slide, and shall be operable by a single effort.
- c) All closets shall meet the following requirements:
 - 1) Hanging poles shall be adjustable from 4 feet above the floor to 5 feet 4 inches above the floor.
 - 2) Closet shelves shall be adjustable from 4 feet 2 inches above the floor to 5 feet 6 inches above the floor.

**appendix C minimum suggestions
for the construction of
private residential
projects with units
intended to be sold,
primarily to the
physically handicapped
and/or elderly**

IN ADDITION TO OTHER REQUIREMENTS, 1 OUT OF 10 RESIDENTIAL UNITS SHOULD MEET THE FOLLOWING REQUIREMENTS.

(a) DWELLING UNITS MUST BE ON ONE LEVEL THROUGHOUT.

(b) KITCHENS SHALL MEET OR BE ADJUSTABLE TO MEET THE REQUIREMENTS SHOWN HERE.

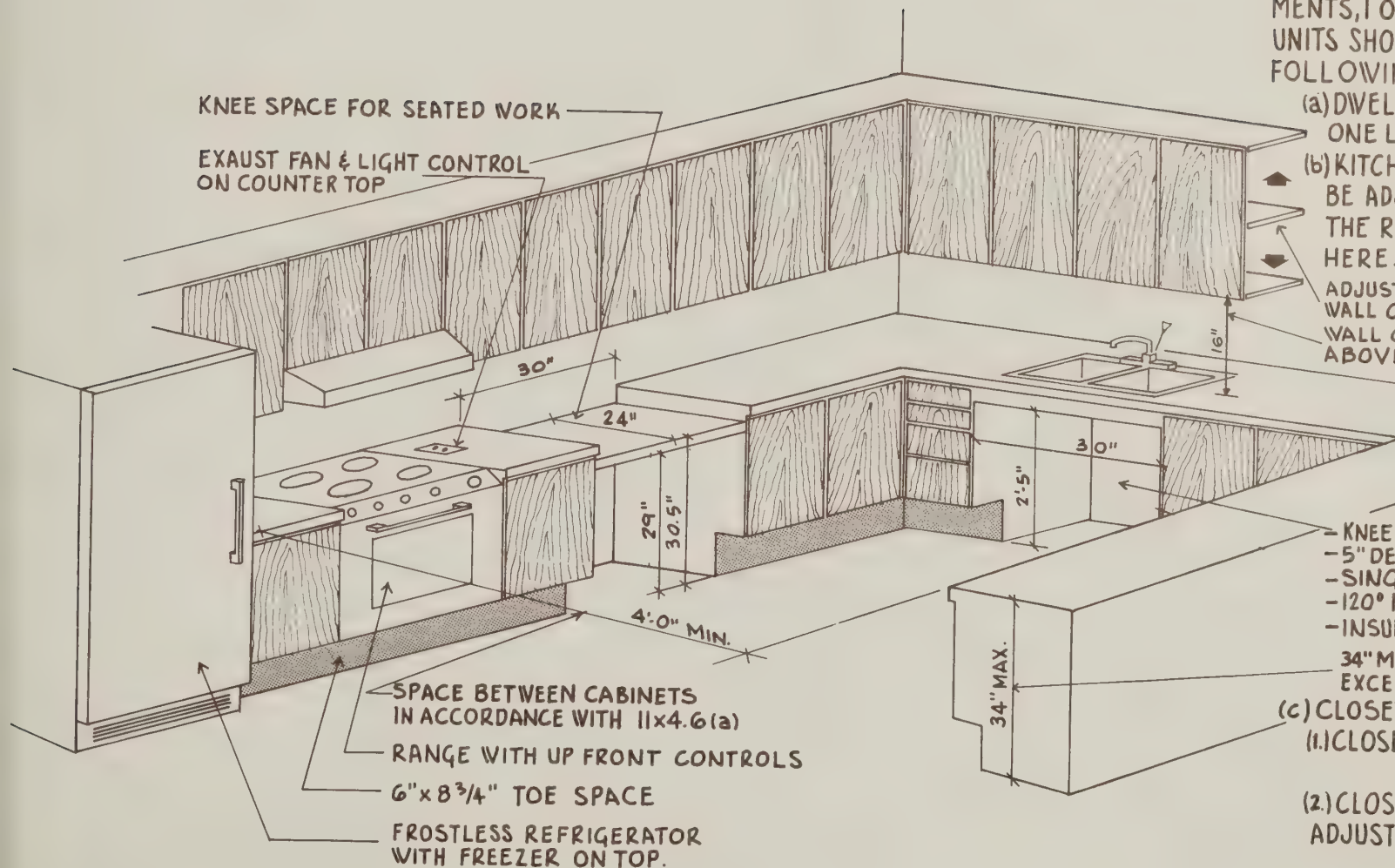
ADJUSTABLE SHELVES IN ALL WALL CABINETS & PANTRIES
WALL CABINET IS 16" MAX. ABOVE COUNTER.

- KNEE SPACE UNDER SINK
- 5" DEEP MAX. SINK BOWL
- SINGLE LEVER CONTROL
- 120° MAX. WATER TEMP. OR
- INSULATE PIPES
34" MAX. COUNTER HEIGHT EXCEPT AT DISHWASHER

(c) CLOSETS

(1) CLOSET POLES SHALL ADJUST

(2) CLOSET SHELVES SHALL ADJUST



appendix C

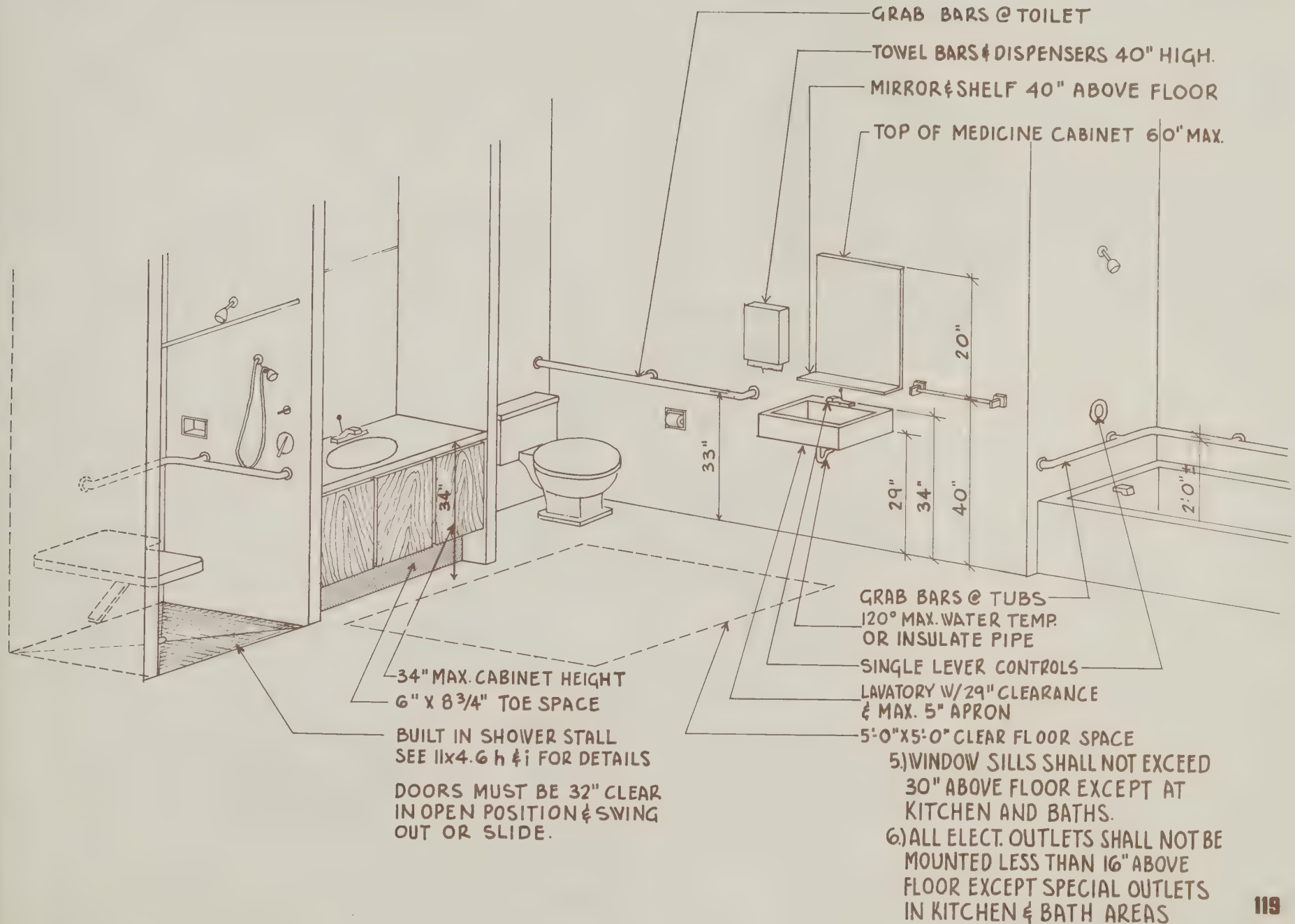
d) Each bathroom in each unit or suite shall meet or be adjustable to meet the following requirements:

- 1) Doors shall have a clear opening of not less than 32 inches when open, shall swing out or slide and shall be operable by a single effort.
- 2) A minimum of 5 feet x 5 feet clear floor space between opposite cabinets or opposite cabinets and walls shall be provided to allow for wheelchair turns except where 6" depth by 8¾" height toe space is provided in accordance with (11X) 4.6 (a) with entrance door located on one side of this clear floor space.
- 3) Stainless steel handrails shall be provided on each side wall. Each handrail shall be 33 inches high and 54 inches long. Each handrail shall be parallel to the floor, 1½ inches in outside diameter, shall have 1½ inches clear space between rail and wall, and be fastened securely at ends and center to support a 250 pound load.
- 4) Lavatories shall be mounted 2 feet 10 inches above the floor to the top of the lavatory and drains shall be trapped as near to the wall as possible.
- 5) The front of the lavatory shall be no less than 22 inches from the wall.
- 6) Lavatories and counter tops, where provided, shall not exceed 5 inches in depth.
- 7) The maximum hot water temperature for all plumbing fixtures shall not exceed 120°F; or exposed hot water lines and drains shall be fully insulated.
- 8) Showers, where provided, shall be no less than 3 feet 4 inches x 4 feet 6 inches clear inside and shall not contain curbs. Doors or openings to showers shall be 3 feet 2 inches minimum in width and open out. The floor surface shall be non-slip. A seat shall be positioned 19 inches above the floor and shall be hinged to fold against the wall. A grab rail shall be attached to the stall wall opposite the seat and shall extend around on the back of the wall. The water control, diversionary shower spray and soap tray shall be placed at a height not to exceed 40 inches above the floor. All controls shall be single lever type.
- 9) All water supply controls for lavatories and tubs shall be single lever controls.
- 10) When mirrors and shelves are provided, at least one mirror and one shelf shall be placed above lavatories no higher than 40 inches above the floor, measured from the top of the shelf and the bottom of the mirror.
- 11) Medicine cabinets shall have adjustable shelves with top of the cabinet mounted no higher than 6 feet above the floor.
- 12) Where provided, toilet rooms shall have at least one towel rack, at least one towel dispenser, and at least one other dispenser and disposal unit mounted at a height not to exceed 40 inches from the floor.

13) Minimum toe space of 8¾ inches in height and 6 inches in depth shall be provided for cabinets in the toilet room.

- e) Window stool heights, except in bathrooms and kitchens, shall not exceed 30 inches above the floor.
- f) All electrical wall outlets shall be mounted a minimum of 16 inches above the floor, except to meet special requirements in kitchen and bathroom areas.

4) EACH BATHROOM SHALL MEET THE REQUIREMENTS ILLUSTRATED HERE.





appendix D- related handicapped legislation

1—An Act to Provide for Treatment of Handicapped and Disabled Persons Equal to that Afforded Other Persons N. C. General Statutes 168-1 through 168-8

ARTICLE 1.

Rights.

§ 168-1. **Purpose and definition.** — The State shall encourage and enable handicapped persons to participate fully in the social and economic life of the State and to engage in remunerative employment. The definition of "handicapped persons" shall include those individuals with physical, mental and visual disabilities. For the purposes of this Article the definition of "visually handicapped" in G.S. 111-11 shall apply. (1973, c. 493, s. 1.)

Editor's Note. — Session Laws 1973, c. 493, s. 3, makes the act effective July 1, 1973.

§ 168-2. **Right of access to and use of public places.** — Handicapped persons have the same right as the ablebodied to the full and free use of the streets, highways, sidewalks, walkways, public buildings, public facilities, and all other buildings and facilities, both publicly and privately owned, which serve the public. (1973, c. 493, s. 1.)

§ 168-3. **Right to use of public conveyances, accommodations, etc.** — The handicapped and physically disabled are entitled to accommodations, advantages, facilities, and privileges of all common carriers, airplanes, motor vehicles, railroad trains, motor buses, streetcars, boats, or any other public conveyances or modes of transportation; hotels, lodging places, places of public accommodation, amusement or resort to which the general public is invited, subject only to the conditions and limitations established by law and applicable alike to all persons. (1973, c. 493, s. 1.)

§ 168-4. **May be accompanied by guide dog.** — Every visually handicapped person shall have the right to be accompanied by a guide dog, especially trained for the purpose, in any of the places listed in G.S. 168-3 provided that he shall be liable for any damage done to the premises or facilities by such dog. (1973, c. 493, s. 1.)

§ 168-5. **Traffic and other rights of persons using certain canes.** — The driver of a vehicle approaching a visually handicapped pedestrian who is carrying a cane predominantly white or silver in color (with or without a red tip) or using a guide dog shall take all necessary precautions to avoid injury to such pedestrian. (1973, c. 493, s. 1.)

§ 168-6. **Right to employment.** — Handicapped persons shall be employed in the State service, the service of the political subdivisions of the State, in the public schools, and in all other employment, both public and private, on the same terms and conditions as the ablebodied, unless it is shown that the particular disability impairs the performance of the work involved. (1973, c. 493, s. 1.)

§ 168-7. **Guide dogs.** — Every visually handicapped person who has a guide dog, or who obtains a guide dog, shall be entitled to keep the guide dog on the premises leased, rented or used by such handicapped person. He shall not be required to pay extra compensation for such guide dog but shall be liable for any damage done to the premises by such a guide dog. (1973, c. 493, s. 1.)

§ 168-8. **Right to habilitation and rehabilitation services.** — Handicapped persons shall be entitled to such habilitation and rehabilitation services as available and needed for the development or restoration of their capabilities to the fullest extent possible. Such services shall include, but not be limited to, education, training, treatment and other services to provide for adequate food, clothing, housing and transportation during the course of education, training and treatment. Handicapped persons shall be entitled to these rights subject only to the conditions and limitations established by law and applicable alike to all persons. (1973, c. 493, s. 1.)

2—An Act to Prescribe Standards for Curb Ramps or Curb Cuts for Handicapped Persons
N. C. General Statutes 136-44.14

§ 136-44.14. Curb ramps or curb cuts for handicapped persons.

- a) Curb constructed on each side of any street or road, where curbs and sidewalks are provided and at other major points of pedestrian flow, shall meet the following minimum requirements:
 - 1) No less than two curb ramps or curb cuts shall be provided per lineal block, located at intersections.
 - 2) In no case, shall the width of a curb ramp or curb cut be less than 40 inches.
 - 3) The maximum gradient of such curb ramps or curb cuts shall be eight and thirty-three one-hundredths percent (8.33%) (12 inches slope for every one-inch rise) in relationship to the grade of the street or road.
 - 4) One curb ramp or curb cut may be provided under special conditions between each radius point of a street turnout of an intersection, if adequate provisions are made to prevent vehicular traffic from encroaching on the ramp.
- b) Minimum requirements for curb ramps or curb cuts under subsection (a) shall be met (i) in the initial construction of such curbs, and (ii) whenever such curbs are reconstructed, including, but not limited to, reconstruction for maintenance procedures and traffic operations, repair, or correction of utilities.
- c) The Department of Transportation, Division of Highways, Design Section, is authorized and directed to develop guidelines to implement this Article in consultation with the Governor's Study Committee on Architectural Barriers (or the Committee on Barrier-Free Design of the Governor's Committee on Employment of the Handicapped if the Governor's Study Committee on Architectural Barriers ceases to exist). All curb ramps or curb cuts constructed or reconstructed in North Carolina shall conform to the guidelines of the Highway Design Section.
- d) The Department of Transportation, Division of Highways, Highway Design Section, is authorized and directed to provide free copies of this Article together with implementary guidelines and standards, to municipal and county governments and public utilities operating within the State. (1973, c. 718, ss. 1-4.)

Editor's Note.—Session Laws 1973, c. 718, s. 5, makes the act effective Sept. 1, 1973.

3—An Act to Provide Tax Credits for Removal of Architectural Barriers to the Handicapped
N. C. General Statutes 105-130.5(a) (8), (b) (10), and (c) (24)

§ 105-130.5. Adjustments to federal taxable income in determining State net income.

- a) The following additions to federal taxable income shall be made in determining State net income:
 - 8) Depreciation or amortization claimed for federal income tax purposes in connection with facilities for the handicapped as such facilities are defined in subdivision (10) of subsection (b) of this section, provided the cost of such facilities has been previously deducted for State income tax purposes.
- b) The following deductions from federal taxable income shall be made in determining State net income:
 - 10) The entire amount of the cost of renovation to an existing building or facility owned by a taxpayer in order to permit physically handicapped persons to enter and leave such building or facility or to have effective use of the accommodations and facilities therein. The deduction shall be taken in the year the renovation is completed, and shall be made in lieu of any depreciation or amortization of the cost of such renovation. "Building or facility" shall mean only a building or facility, or such part thereof as is intended to be used, and is actually used, by the general public. If such building or facility is owned by more than one owner, the cost of renovation shall be apportioned among or between the owners as their interests may appear. The minimum renovation required in order to entitle a taxpayer to claim the deduction herein provided shall include one or more of the following: the provision of ground level or ramped entrances, free movement between public use areas, and washroom and toilet facilities accessible to and usable by physically handicapped persons.
- c) The following other adjustments to federal taxable income shall be made determining State net income:
 - 24) Deduction for Removal of Architectural Barriers to the Handicapped.—Any taxpayer who shall renovate an existing building or facility owned by such taxpayer in order to permit physically handicapped persons to enter and leave such building or facility, or to have effective use of the accommodations and facilities therein shall be allowed a deduction for the entire amount of the cost of such renovation. The deduction shall be allowable in the year the renovation is completed and shall be in

lieu of any depreciation or amortization of the cost of such renovation. "Building or facility" shall mean only a building or facility, or such part thereof as is intended to be used, and is actually used, by the general public. If such building or facility is owned by more than one owner, the cost of renovation shall be apportioned among or between the owners as their interests may appear. The minimum renovation required in order to entitle a taxpayer to claim the deduction herein provided shall include one or more of the following: the provision of ground level or ramped entrances, free movement between public use areas, and washroom and toilet facilities accessible to and usable by physically handicapped persons. (1939, c. 158, s. 322; 1941, c. 50, s. 5; 1943, c. 400, s. 4; c. 668; 1945, c. 708, s. 4; c. 752, s. 3; 1947, c. 501, s. 4; c. 894; 1949, c. 392, s. 3; 1951, c. 643, s. 4; c. 937, s. 4; 1953, c. 1031, s. 1; c. 1302, s. 4; 1955, c. 1100, s. 1; c. 1331, s. 1; cc. 1332, 1342; c. 1343, s. 1; 1957, c. 1340, ss. 4, 8; 1959, c. 1259, s. 4; 1961, c. 201, s. 1; c. 1148; 1963, c. 1169, s. 2; 1965, c. 1048; 1967, cc. 259, 550; c. 892, s. 6; c. 1110, s. 3; c. 1252, s. 2; 1969, cc. 725, 1082, 1123; c. 1175, s. 2; 1971, c. 1087, s. 2; c. 1206, s. 2.)

4—An Act to Amend the Income Tax Act to Provide a Credit Against Income Tax for the Construction of Dwelling Units Which Satisfy North Carolina Building Code Standards for Handicapped Living Units **House Bill 1224, ratified by General Assembly of North Carolina, 1973 Session (2nd Session, 1974)**

The General Assembly of North Carolina enacts:

Section 1: Division I of Article 4, Subchapter I of Chapter 105 of the North Carolina General Statutes is hereby amended by adding a new section thereto to be designated as G. S. 105-130.22 and to read as follows:

§ 105-130.22 Tax credit for construction of dwelling units for handicapped persons. — There shall be allowed to corporate owners of multi-family rental units located in North Carolina as a credit against the tax imposed by this division, an amount equal to five hundred fifty dollars (\$550.00) for each dwelling unit constructed by such corporate owner which conforms to the requirements of Section (11x) of the North Carolina Building Code for the taxable year within which the construction of such dwelling unit is completed; provided, that credit will be allowed under this section only for the number of such dwelling units completed during the taxable year which does not exceed five percent (5%) of the total of such units completed during the taxable year; provided further, that if the credit allowed by this section exceeds the tax imposed by this division reduced by all other credits allowed by the provisions of this division, such excess shall be allowed against the tax imposed by this division for the next succeeding year; and provided further, that in order to secure the credit allowed by this section the corporation shall file with its income tax return for the taxable year with respect to which such credit is to be claimed, a copy of the occupancy permit on the face of which there shall be recorded by the building inspector the number of units completed during the taxable year which conforms to Section (11x) of the North Carolina Building Code."

Section 2: Division II of Article 4, Subchapter I of Chapter 105 of the North Carolina General Statutes is hereby amended by adding a new section thereto to be designated as G. S. 105-151.1 and to read as follows:

§ 105-151.1. Tax credit for construction of dwelling units for handicapped persons. — There shall be allowed to resident owners of multi-family rental units located in North Carolina as a credit against the tax imposed by this division, an amount equal to five hundred fifty dollars (\$550.00) for each dwelling unit constructed by such resident owner which conforms to the recommendations of Section (11X) of the North Carolina Building Code for the Taxable year within which the construction of such dwelling unit is completed; provided, that credit will be allowed under this

section only for the number of such dwelling units completed during the taxable year which does not exceed five percent (5%) of the total of such units completed during the taxable year; provided further, that if the credit allowed by this section exceeds the tax imposed by this division reduced by all other credits allowed by the provisions of this division, such excess shall be allowed against the tax imposed by this division for the next succeeding year; and provided further, that in order to secure the credit allowed by this section the taxpayer shall file with his income tax return for the taxable year with respect to which such credit is to be claimed, a copy of the occupancy permit on the face of which there shall be recorded by the building inspector the number of units completed during the taxable year which conform to Section (11X) of the North Carolina Building Code."

Section 3. This act shall become effective for income years beginning on and after January 1, 1974.

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